

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. Contract ID Code Cost-Plus-Fixed-Fee		Page 1 Of 31	
2. Amendment/Modification No. 0003		3. Effective Date		4. Requisition/Purchase Req No. SEE SCHEDULE		5. Project No. (If applicable)	
6. Issued By TACOM AMSTA-LC-CAPA-G FREDRICK T. SEEBURGER (810) 574-8096 WARREN, MICHIGAN 48397-5000 EMAIL: SEEBURGR@TACOM.ARMY.MIL		Code W56HZV		7. Administered By (If other than Item 6) Code			
				SCD PAS ADP PT			
8. Name And Address Of Contractor (No., Street, City, County, State and Zip Code)				<input checked="" type="checkbox"/>		9A. Amendment Of Solicitation No. DAAE07-00-R-N061	
				<input type="checkbox"/>		9B. Dated (See Item 11) 2000MAR08	
				<input type="checkbox"/>		10A. Modification Of Contract/Order No.	
				<input type="checkbox"/>		10B. Dated (See Item 13)	
Code		Facility Code					
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS							
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in item 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended, <input checked="" type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing items 8 and 15, and returning <u>2 signed</u> copies of the amendments: (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. Accounting And Appropriation Data (If required)							
13. THIS ITEM ONLY APPLIES TO MODIFICATIONS OF CONTRACTS/ORDERS It Modifies The Contract/Order No. As Described In Item 14.							
<input type="checkbox"/>		A. This Change Order is Issued Pursuant To: The Changes Set Forth In Item 14 Are Made In The Contract/Order No. In Item 10A.					
<input type="checkbox"/>		B. The Above Numbered Contract/Order Is Modified To Reflect The Administrative Changes (such as changes in paying office, appropriation data, etc.) Set Forth In Item 14, Pursuant To The Authority of FAR 43.103(b).					
<input type="checkbox"/>		C. This Supplemental Agreement Is Entered Into Pursuant To Authority Of:					
<input type="checkbox"/>		D. Other (Specify type of modification and authority)					
E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the Issuing Office.							
14. Description Of Amendment/Modification (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) SEE SECOND PAGE FOR DESCRIPTION							
15A. Name And Title Of Signer (Type or print)				16A. Name And Title Of Contracting Officer (Type or print)			
15B. Contractor/Offeror (Signature of person authorized to sign)		15C. Date Signed		16B. United States Of America By (Signature of Contracting Officer)		16C. Date Signed	

NSN 7540-01-152-8070
PREVIOUS EDITIONS UNUSABLE

30-105-02

STANDARD FORM 30 (REV. 10-83)
Prescribed by GSA FAR (48 CFR) 53.243

Except as provided herein, all terms and conditions of the document referenced in item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

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SECTION A - SUPPLEMENTAL INFORMATION

The pages in this amendment are designed as page replacements to incorporate the following changes to the solicitationas as follows:

<u>From Solicitation</u>	<u>From Amendment</u>
Delete-pages 5 and 6 (No deletion)	Replace with pages 3 and 4 Add page 5
Delete pages 19 thru 23	Replace with pages 6 thru 10
Delete pages 71 thru 84	" " " 12 thru 26
Delete pages 95 thru 98	" " " 27 thru 31

The purpose of this amendment, 0003, is:

1. To incorporate Clause A-6 and delete the erroneously generated second Executive Summary (pages 5 and 6 of the soliciation - replacement page 3 and 4 of the amendment).
2. To incorporate Clause B-1 (new page 9a of the solicitation - page 5 of the amendment)
3. To revise Section C, paragraph C.4.2.4.3 as underlined (pages 19 thru 23 of the solicitation - replacement pages 6-10 of the amendment).
4. To revise the following Section L paragraphs as underlined (pages 71-84 of the solicitation - replacement pages 12-26 of the amendment)

L.1.2, L.1.3, L.5.2.1, L.5.2.4.1, L.6.1.1, L.6.2.1, L.6.4.1, L.6.4.2, L.6.4.2.1, L.6.4.3, L.6.4.3.1,
5. To revise the following Section M paragraphs as underlined (pages 95-98 of the solicitation - replacement pages 27-31 of the amendment)

M.3.2, M.4.1, M.5.3, M.6.2
6. To correct Attachment 5, Enclosure E, para. 1.1.4, Sustained Speeds, Vehicle Speed, NBC-On,NBC-Off, grade 10 as attached and identified as Attach5_EncEr - hotlinked to this amendment
7. To revise Attachment 5, Enclosure F, para 3.3.8.1 (Crusader CD-ROM) to read "The powerpack embedded application programs shall interface with the operating system as defined in Appendix F."
8. To correct Attachment 5, Enclosure C, Data Sheet 5 concerning total propulsion system weight (also noted in revised Section M.3.2 of this document) as attached and identified as Attach5_EncCr - hotlinked to this amendment.
9. To delete clause I-111, FAR 52.223-9, Certification and Estimate of Recovered Materials, page 44 of 99.
10. To expedite definitization of a transmission contract, all contractors are encouraged to provide a complete transmission proposal to U.D.L.P, Mr. Hugh Simerson, (612) 572-7649 as soon as possible. Submission, or lack thereof, will in no way affect evaluation of your proposal for this procurement.

Except as noted herein, all other terms, conditions and specifications of the solicitation remain unchanged.

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If you have questions about the content of any specific item posted on our home page, please call the buyer or point of contact listed for the item

end

A-3 52.204-4007 EXECUTIVE SUMMARY--REQUIRED USE OF ELECTRONIC COMMERCE JUL/1999
(TACOM)

This solicitation contains a Section H and a Section L provision concerning TACOM's use of Electronic Commerce, which includes Electronic Data Interchange (EDI) and the World Wide Web (WWW), in issuing awards, contract modifications and delivery orders. The selected offeror is required to register with DOD Central Contractor Registration (CCR) and will receive an electronic Notice of Award/Modification via e-mail. All awards, modifications, and delivery orders are posted on the TACOM Business Opportunities Webpages. The contractor will have the option of downloading the award from the WWW or receiving it through EDI.

A-4 52.215-4854 PAPERLESS ELECTRONIC RESPONSES REQUIRED IN RESPONSE TO THIS APR/99 YOU
SOLICITATION/REQUEST
ARE REQUIRED TO SUBMIT YOUR OFFER, BID OR QUOTE VIA PAPERLESS ELECTRONIC MEDIA. SEE THE PROVISION ENTITLED "ELECTRONIC OFFERS (OR QUOTES' OR BIDS') REQUIRED IN RESPONSE TO THIS SOLICITATION (OR 'REQUEST FOR QUOTATIONS')" FOR MORE SPECIFIC INFORMATION.

(End of provision)

A-5 52.247-4020 NOTICE -- FAR FOB ORIGIN CLAUSE FEB/1998 (a) Please
(TACOM)
carefully review the FAR FOB Origin clause (52.247-29) in this solicitation.

(b) Paragraph (c) of that clause requires you to perform all the tasks required under the clause at the plant(s) where the supplies will be finally inspected and accepted.

(c) If facilities for shipment by carrier's equipment aren't available at your plant(s), the clause (with some restrictions) allows you to perform the required tasks FOB at the closest location where you can ship by carrier's equipment.

(d) If you don't comply with the requirements of paragraph (c) of the FAR FOB ORIGIN clause, then:

(1) your bid under a sealed bid acquisition will be non-responsive; or:

(2) your offer under a negotiated acquisition may be rejected.

A-6 BUY DECISIONS

This solicitation is open to competition between Department of Defense activities and private firms. Under the authority of 10 USC 2208(j), applicable working capital funded facilities are available as potential subcontractors.

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(AMEND 0003 - REVISED PAGE 6 -
LEFT BLANK INTENTIONALLY)

*** END OF NARRATIVE A005 ***

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SECTION B - SUPPLIES OR SERVICES AND PRICES/COSTS

(AMEND 0003 - REVISED PAGE 9a)

B-1

The Government shall provide funds under this contract covering the estimated cost and fee on an incremental basis as provided for in the following schedule and pursuant to the Clause entitled Limitation of Funds. It is estimated that the incremental amounts are sufficient for the performance of work in each of the cited periods. The Government may, at its discretion, provide funds on an incremental basis within each fiscal year. The contractor shall so plan and execute the work required by this contract as to expend and/or commit funds compatible with the proposed schedule below. Whenever the contractor has reason to believe that funds obligated for any fiscal year are either insufficient or excessive for the performance of work required in that fiscal year, the Government shall be notified.

Proposed Funding Schedule Requirements:

Performance Period	Amount
FY00 - Award through Nov 30, 00	\$ _____
FY01 - Dec 01, 00 through Nov 30, 01	\$ _____
FY02 - Dec 01, 01 through Nov 30, 02	\$ _____
FY03 - Dec 01, 02 through Completion	\$ _____

The offeror shall complete the proposed funding requirements lines above which shall represent the total cumulative amounts shown for all clins elsewhere in Section B of this solicitation.

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SECTION C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

(AMEND 0003 - REVISED PAGE 19)

sufficient detail and accuracy to support the following:

- generation of interface control documentation through the CDS database
- design of interface cabling
- design of interface control and power distribution circuitry
- verify use of Standard Electronics has been maximized
- verify use of Common (electrical) parts has been maximized

C.4.2.3.3 The offeror shall perform and support change management using the prime contractor's EEI SSM Change Notice Process in accordance with the following:

- | | | |
|--------------------|--------------------|-----------------|
| - Informal Changes | EEI SSM CN | "chng_proc.ppt" |
| - Formal Changes | EEI PROCESS SSM CN | "ssm_cn.ppt" |

C.4.2.3.4 The offeror shall support the program Electrical System Interface Working Group (ESIWG) and electrical/electronic change control process. The ESIWG is the Crusader and Abrams central authority for managing electrical/electronic interface issues, and meets on a regular (monthly) basis.

C.4.2.4 Electrical/Logical (Software) Interfaces:

C.4.2.4.1 The offeror's electronic hardware and software shall be compatible with the Crusader and Abrams vehicle electronics architecture and software architecture interfaces. If under this contract, new software is developed or commercial off the shelf (COTS) software is modified by 35% or more, the software must conform with DOD Joint Technical Architecture (FTA) and IEEE/EIA ISO 12207.

C.4.2.4.2 The offeror shall use models and simulations to emulate the signals and the data exchanged at electrical and logical interfaces of the power pack hardware and software. Models and simulations (e.g., object models, stimulators, emulators and simulators) will be used to replicate sub-system features for the purpose of early design iteration, interface definition and integration evaluation. The offeror shall use these models and simulations to perform design analyses/validations, assess functionality and conduct performance measurements and predictions and assess timing and states/modes transition effects.

C.4.2.4.2.1 Simulation, Emulation and Stimulation (SES) is a software development activity used to describe the use of low- and high-fidelity models. The offeror shall use SES to achieve early verification and validation of electrical, electronic and software interfaces.

C.4.2.4.2.2 Low Fidelity Models: The low fidelity models are used to simulate interfaces between CSCIs and are useful during CSCI or qualification testing when either the target hardware or interfacing software is not available. These models are executed on workstations using the Lynx Operating System (OS) and are valuable for interface verification. For Abrams, these models are executed on workstations using XWindows. The offeror shall use low fidelity models to verify and validate external power pack interfaces early in development (i.e., prior to the availability of target hardware and software).

C.4.2.4.2.3 High Fidelity Models (Crusader Only): The high fidelity models are developed using MatrixX on workstations provided to the contractor. These models are high-resolution models used to replicate the behavior of the interfacing hardware. The offeror shall use high fidelity models to perform design analysis and validation, conduct performance measurements and predictions, and assess timing and mode transition effects early in development (i.e., prior to the availability of target hardware).

C.4.2.4.2.4 The offeror shall deliver simulator(s) and emulator(s) of the engine external interfaces and support integration of these products into UDLP's SIF and GDLS' SIL. The simulator(s) and emulator(s) shall consist of both offeror-developed software and UDLP/GDLS-supplied hardware. Delivery of the emulators and simulators shall be achieved in order to support early integration of the engine electrical/electronic controllers with external vehicle interfaces.

C.4.2.4.3 The offeror shall support the program Software Interface Working Group and software interface change control process. This working group is the central authority for managing software interface issues, and meets on a regular (monthly) basis. The offeror shall update and maintain the interface requirements in Enclosure F, Appendix F to attachment and submit proposed changes to UDLP for approval.

C.4.2.4.4 The offeror shall support the program Automotive Controls Interface Working Group (ACIWG). This working group is the central authority for managing automotive controls/mobility interface technical issues and meets on a regular (monthly) basis. The focus of the ACIWG is on identifying and resolving the technical issues addressing vehicle electronics and embedded software which impact the mobility systems interface definitions or design, vehicle electronics/embedded software system architecture, and mobility systems hardware/software component commonality.

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C.4.3 Technical Data:

C.4.3.1 The offeror shall prepare and maintain technical data using MIL-DTL-31000 as a guide. Data shall include the Engineering Bill of Materials (EBOM), three dimensional (3D) solid models, two dimensional (2D) assembly and detail part drawings (derived from 3D solid models), test plans/procedures, detailed specifications, and any other information necessary to verify the engine, transmission, power pack and propulsion system designs meet all requirements. The offeror shall develop product drawings and associated lists using MIL-STD-100G and ASME Y14.24M-1989 as guides. Drawings shall provide a level of detail and design disclosure equivalent to product drawings as defined in MIL-DTL-31000. Drawing practices shall be in accordance with the attached (Enclosure B to Attachment 7) Design Drawing Requirements, use the standard Abrams and Crusader drawing formats defined in ProEngineer, and be identified with the offeror's assigned drawing numbers and CAGE Code. Product marking, based on the requirements of MIL-STD-130, shall be defined in the applicable drawing notes. All technical data will be generated and disseminated electronically using IDE.

C.4.3.2 This is an International System of Units (SI) program, and the offeror shall provide physical interfaces conforming to this practice. All dimensions and tolerances used in reports, specifications and drawings developed under this contract shall be given in metric units. Guidance on metric design requirements is provided in IEEE-268. Components shall be designed and produced in metric, unless there is a performance penalty, a cost penalty, or items are unavailable in metric, then soft conversion metrics are acceptable. Mill-run purchased materials and Commercial Off the Shelf (COTS) components are excluded from the metric requirement.

C.5 System Test and Evaluation:

C.5.1 General: It is intended that the offeror and Army jointly develop a test program which validates the offeror's approach for achieving the specified program objectives. Offerors are requested to propose a joint Government/contractor test concept that: (1) meets the overall milestone schedules in Attachment 2, (2) provides a high degree of confidence that the system meets the integration and performance requirements, with particular emphasis on durability/reliability, and a low risk transition to production, and (3) takes advantage of common test data between the offeror and Army testing programs for both Abrams and Crusader. The following are the minimum desired test requirements:

C.5.1.1 Test Plans: The offeror shall develop and submit test plans detailing the necessary engineering development tests, performance verification tests, and system verification tests necessary to verify engine, transmission, power pack and propulsion system characteristics and performance.

C.5.1.2 Failure Reporting and Corrective Action System (FRACAS): The offeror shall employ a FRACAS to maintain a history of test configurations, test results, test incidents and corrective actions for all contractor and Government testing. FRACAS will be implemented for all engine, transmission and power pack testing. The offeror shall record test incidents during all contractor testing and make them available to the Government. During Government testing, the Government will use Test Incident Reports (TIRs) and Corrective Action Reports (CARs) in the Government Army Test Incident Reporting System (ATIRS) database. For developmental configuration testing, the offeror's internal FRACAS is acceptable; for Abrams production verification and Crusader objective configuration testing, the offeror shall use ATIRS. The offeror shall establish a Failure Review Board (FRB) to provide a technical forum for review and resolution of hardware and software failures. In addition, the contractor shall participate in the Government Mobility Element FRB, as required.

C.5.2 Phase I Test and Evaluation Prototype Quantities:

C.5.2.1 Abrams: The Army will require a total of thirteen (13) production representative prototypes. Seven (7) prototype engines will be fully integrated into Abrams tanks. The remaining six (6) prototypes will be used for stand alone bench testing and as spares. The prototype engines to be delivered by the offeror will support the Army's Abrams test and evaluation concept as summarized below.

<u>Quantity</u>	<u>Purpose</u>
1 Engine	Propulsion System Integration Evaluation in a Prototype Engineering tank in GDLS SIL
1 Engine	Propulsion System Installation Evaluation in a Prototype Logistics tank at the GDLS Sterling Logistics Center
5 Engines	Propulsion System Prototype Test Vehicles at Army Test Sites
2 Engines	Power pack Engineering/Testing/Logistic Evaluation at Engine Developer
1 Engine	Power pack testing at TACOM-TARDEC Propulsion Test Laboratory
1 Engine	Transmission Developer/Manufacturer
2 Engines	Part of the Propulsion Systems Spares for Army Test Program

C.5.2.1.1 The Army intends to test the performance and reliability of the propulsion system as integrated in the Abrams Vehicle System. The Army's system level integration and performance verification testing is expected to last approximately 20 months.

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C.5.2.2 Crusader: The Crusader prototype engines to be delivered under this contract will be tested as part of the Crusader integrated power pack. The Army will require a total of eleven (11) power packs to be integrated under the UDLP system integration contract; two (2) power packs may reflect a developmental configuration and will be used to acquire performance data to support MS II. The remaining nine (9) power packs will reflect an objective configuration suitable for Crusader prototype vehicle installation and test. The breakdown of the Crusader power pack test and evaluation quantities are summarized below:

<u>Quantity</u>	<u>Purpose</u>
2 Engines	Power Pack Testing as part of Contractor MS II Performance Testing
4 Engines	Power Pack Contractor Development Testing
1 Engine	Power Pack Contractor Performance Verification PTL Testing
1 Engine	Power Pack Chassis IAT&C at UDLP-designated integration site
1 Engine	Power Pack Vehicle IAT&C at UDLP System Integration Facility
2 Engines	Test Spares

C.5.3 Contractor Testing:

C.5.3.1 General. The objective of contractor testing is to verify compliance of the engine with the performance and integration requirements prior to delivery of prototypes to the Government. The offeror's test effort should include a logical sequence of component, subsystem and system level hardware and software tests, including models and simulations to demonstrate acceptable system integration and compliance with performance and supportability requirements in the systems specification. Deficiencies found during this testing should be corrected by the offeror and incorporated in the delivered design hardware and software.

C.5.3.2 Abrams Contractor Testing (Lab Test Cell Environment): Two engines shall remain at the offeror's facility to support in-house engineering and test cell testing. At a minimum, those engines shall be operated to the Abrams 1000-hour test as specified in Attachment 4. Required engineering data will be collected, analyzed and conformance to specification requirements will be determined. As each engine completes lab cell testing it will undergo a tear-down inspection for wear patterns, weaknesses and/or incipient failures.

C.5.3.3 Abrams Contractor Testing (In-vehicle): The Army will assess the integration and installation of two (2) propulsion systems. One (1) in M1A1 tank and one (1) in an M1A2 SEP Abrams tank. Integration is defined as that portion of the non-recurring development program that involves packaging all the systems and subsystems of the propulsion system into a single concept that optimizes the system performance of the vehicle. Installation is defined as that portion of the recurring production or retrofit program associated with installing the propulsion system into the vehicle. The M1A2 SEP integration/installation will be evaluated in an Engineering tank located in GDLS' shop/software SIL facility. The M1A1 integration/installation will be evaluated in a Logistics (M1A1) tank located at GDLS' Log Center.

C.5.3.4 Crusader Contractor Power Pack Testing:

C.5.3.4.1 For Crusader, the offeror shall allocate two (2) engines (developmental configuration acceptable) for early power pack performance testing during PDRR. The test results will be used by the Government to demonstrate the achievability of the Crusader MS II mobility exit criteria. Engine, transmission and power pack test results must be available no later than 5 months prior to the scheduled MS II decision review.

C.5.3.4.2 Concurrently, the offeror will develop the objective configuration engine required to support the development plan and objectives. A total requirement for nine (9) objective configuration engines is anticipated to support Crusader power pack development during PDRR. The offeror will allocate four (4) objective configuration engines for offeror in-house engineering development testing. In addition, the offeror shall allocate one (1) engine for power pack performance verification testing. This testing will encompass performance verification of all power pack performance specification requirements (excluding those beyond the capabilities of the test cell) and culminate with the conduct of the TACOM Combat Vehicle 600-Hour Mission Profile test. The offeror shall also provide one (1) engine to support chassis integration activities at the Crusader chassis integration site, and one (1) engine to support Crusader vehicle integration activities in the UDLP System Integration Facility (SIF). The emphasis of these IAT&C activities will be on the electrical/electronic and software integration of the engine with the chassis and vehicle respectively. Two (2) spare objective configuration engines are required to address program contingencies as required.

C.5.4 Abrams Government Testing (In-vehicle): Five engines/propulsion systems will be required for prototype vehicle (M1A1 and M1A2 SEP) testing at government test sites. Three (two at YPG and one at APG) propulsion systems will be utilized for

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Reliability - Durability endurance testing and will accumulate no less than 7500 Abrams OPMODE miles (750 engine hours) each. Scoring of propulsion system failures will be per Abrams Engine/Power train Failure Definition. Two propulsion systems will be used for Engineering in-vehicle performance evaluation, one at APG and one at YPG. Operation in an extreme cold environment will be evaluated in the cold chamber at APG as part of the performance test.. The Government will assess the merits of the design against Abrams fire power specifications. In that regard, the integration must provide sufficient hydraulic performance (pressure and flow rates) to allow the Gun/Turret Drive System to meet its requirements to rapidly slew the turret, elevate the gun and accurately move the gun and turret in response to the target tracking data from the Gunner's Primary Sight or the Commander's Independent Thermal Viewer.

C.5.5 Test Support: The offeror, under this contract, shall support power pack installation, integration and test at each site for each power pack asset. During testing, the offeror is expected to provide full engineering and logistics support to include spare/repair parts, tools, special tools, test equipment, maintenance support and failure analysis for the engine/power pack. During Propulsion Test Lab (PTL) testing, the offeror shall provide engineering, maintenance and logistics support; Army technicians are available to physically conduct the PTL tests. The offeror shall also support vehicle chassis integration, assembly test and check-out (IAT&C) at the Crusader chassis integration site, and vehicle IAT&C at the at the UDLP System Integration Facility (SIF) and the GDLS SIL and Logistic Center. The IAT&C will be performed to ensure the proper physical and functional integration of power pack hardware, electronics/firmware and software with the chassis and the vehicle respectively. Offeror support during IAT&C shall include on-site engineering support to perform integration activities, troubleshooting/failure analysis and repair.

C.6 Government Industrial Plant Equipment (IPE):

The Government does not intend to purchase any new IPE to support this contract.

C.7 Logistics: The offeror shall plan, implement, execute, and manage an Integrated Logistics Support (ILS) program focused on design influence, development of support data, and preparation for supporting Abrams/Crusader with an Integrated Life-Cycle Support Environment for engine development. The ILS program shall be structured to ensure that the offeror's efforts consider logistics supportability integrated with the design process. The Offeror's Scope of Work shall address the following elements required to develop, field, and support the Engine/Power-Pack in accordance with the Enclosures in Attachment 6.

C.7.1 Maintenance and Diagnostics planning- The offerors shall develop a maintenance concept that is consistent with the Army's Two Level Maintenance concept (Enclosure A, attachment 6), and shall consider Anniston Army Depot for Depot Level Repair. The Offeror will also consider contractor support. On-board, built-in fault isolation/diagnostic/prognostic features should preclude the need for any external engine test equipment at the tactical field level. Any external requirements for diagnostics shall be compatible with the Integrated Family of Test Equipment (IFTE) and Direct Support Electrical System Tests Sets (DSESTS).

C.7.2 Supply Support - The offerors shall develop and implement an approach to meeting the spare and repair part support requirements to comply with the Army's readiness goal of 90 percent.

C.7.3 Technical Data. The offeror shall develop and deliver preliminary technical data to include provisioning data, TM/IETM, repair/spare parts list, description /list of all special tools & test equipment, and Maintenance /Repair instructions.

C.7.4 Packaging - The offeror shall develop all required packing and containers design to support the Engine/Power Pack.

C.7.5 Training/Training Aids and devices - The offeror shall develop preliminary Training Plans to include preliminary Program of Instructions and Training Aids and devices. The offeror shall coordinate with the Simulation, Training and Instrumentation Command (STRICOM) and to ensure that the use of existing training aids and devices is maximized.

C.7.6 The ILS program shall focus on achieving a significant reduction in O&S costs while increasing end item readiness. The offeror shall develop and implement a tailored LSA process as the primary method for these goals using the former MILSTD 1388-1A and MILSTD 1388-2B as guides. The LSA process shall target identification of critical supportability requirements and resolution of potential problems through design solutions. The offeror shall furnish an Integrated Logistics Support Plan in contractor format in accordance with the Integrated Master Schedule that describes the ILS program. All elements of ILS must be developed in coordination with the system engineering effort and with each other. Tradeoffs may be required between elements in order to acquire a system that is affordable (lowest LCC), operable, supportable, sustainable, transportable, and environmentally sound within the resources available.

The developer shall perform the LSA to a level , which addresses key support drivers, critical tasks, and source data for operator organizational and selected direct support level technical publications and training. As a part of the LSA process, the developer shall identify support equipment and special facilities requirements. Required LSA tasks and corresponding levels of detail below.

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Description	Developer Requirements*
Program/design reviews	<ul style="list-style-type: none"> - Support program/system level reviews, Support Integrated Product Team (SIPT) meetings - Support may include input to briefing slides, attendance, and briefings
Standardization	<ul style="list-style-type: none"> - Define support-related design constraints based on standardization - Provide design recommendations for standardization approaches
Design factors	<ul style="list-style-type: none"> - Influence hardware/software design, including support equipment, by identifying technological advancements and state-of-the-art design approaches which will enhance system support - Document and track specific design recommendations and improvements
Functional requirements identification	<ul style="list-style-type: none"> - Provide listing of all tasks required to support hardware/software - Task list should be substantiated by RCM, FMECA, other analysis or Spec.
Support alternatives	<ul style="list-style-type: none"> - Develop support alternatives to correct supportability design deficiencies and reduce or simplify support resources
Alternatives/tradeoffs	<ul style="list-style-type: none"> - Include support considerations in all component level trade studies - Perform level of repair analysis - - Document trade-off including assumptions
Task analysis	<ul style="list-style-type: none"> - Perform detailed task analysis of crew/unit level task and onboard direct support tasks.
Test and evaluation	<ul style="list-style-type: none"> - Provide planning inputs to supportability demonstration.

*** END OF NARRATIVE C002 ***

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SECTION I - CONTRACT CLAUSES

	<u>Status</u>	<u>Regulatory Cite</u>	<u>Title</u>	<u>Date</u>
I-1	DELETED	52.223-9	CERTIFICATION AND ESTIMATE OF PERCENTAGE OF RECOVERED MATERIAL CONTENT FOR EPA DESIGNATED ITEMS	OCT/1997

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SECTION L - INSTRUCTIONS, CONDITIONS, AND NOTICES TO OFFERORS

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INSTRUCTIONS, CONDITIONS AND NOTICES TO OFFERORS

L.1 General Proposal Instructions and Content:

L.1.1 The proposal, subject to the late proposals and revisions section of FAR 52.215-1, "Instructions to Offerors - Competitive Acquisition (Oct 1997) Alt I (Oct 1997)", shall be submitted in the format and quantities set forth below. Section M, "Evaluation Criteria For Award", sets forth the evaluation guidance pertaining to Areas, Elements and Factors. The "Areas" are (1) Technical, (2) Logistics, (3) Performance Capability and (4) Total Ownership Cost. Proposals shall be submitted in the English language and in five (5) separate volumes for Government review. As used herein, the term "volume" may include various types of information media, such CD-ROM, 3.5 inch diskettes, or some other format as specified in this solicitation. The first volume shall contain an executive level summary of the offerors proposed approach, the Program Work Breakdown Structure (PWBS), Contract Work Breakdown Structure (CWBS) and the proposed SOW. This volume shall also contain solicitation Sections A through K with all fill-ins completed, the fill-ins for the cost and price proposal and the Standard Form 33. The second volume shall set forth the offeror's technical approach, for meeting the propulsion system size and the weight and performance requirements. The third volume shall address the offeror's logistics approach. The fourth volume will be the contract performance capability/past performance and small business participation. The fifth volume shall detail the offeror's estimated costs for each Contract Line Item Number (CLIN) and all required supporting data.

L.1.2 The offeror's proposal shall be submitted in five (5) identical sets of CD-ROMs or 3.5 diskettes. In addition, five identical hard copies of the proposal shall be submitted in printed form.

L.1.3 File format must be Microsoft Word 97, Excel 97, and Power Point 97 or a file format acceptable to the Contracting Officer. Engineering Drawings shall be submitted in accordance with paragraph L.3.2.2 below. Pages can be printed two sided and shall have print no smaller than 12 pitch, on standard eight and one-half (8 1/2) by eleven (11) inch paper. However, single fold-out pages up to seventeen (17) by eleven (11) inches may be used. Scale Drawings may be larger than 17" X 11". Each volume shall be sequentially numbered (for example, copy one (1) of...) and shall include: (a) Title page; (b) Table of Contents; and (c) List of Tables, Figures and Attachments. All pages shall be sequentially numbered.

L.2 Volume 1 - The Proposal Overview and Scope of Work

L.2.1 Volume 1 shall be divided into five sections: Section 1 is the Executive Summary, Section 2 is the Program Work Breakdown Structure (PWBS) and the Contract Work Breakdown Structure (CWBS), Section 3 is the Proposed Contract Scope of Work, Section 4 contains the performance specifications/characteristics of the proposed hardware to be incorporated in the model contract. Section 5 contains solicitation Sections A through K with all fill-ins completed, the fill-ins for the cost and price proposal and the signed Standard Form 33.

L.2.2 Section 1 - Executive Summary: The Executive Summary shall give a general description of the offeror's proposed solution. The Executive Summary shall not be more than 15 pages in length and should include:

a. A brief description of the offeror's organizational structure that will be responsible for performing the contract efforts, including any established major subcontractors/team members and their degree of responsibility. Include a general description of the expected role of the vehicle system integrating contractors and how that relationship will be established.

b. A general description of what is being proposed with emphasis on how that approach satisfies each of the Government's overarching objectives (paragraph C.1.1 of the SOO).

c. Discuss the Phase II assumptions and impacts related to the transition from development to production and the sustainability of the approach. For Abrams include the field application impacts and assumptions.

L.2.3 Section 2 - Program and Contract Work Breakdown Structure:

L.2.3.1 Offerors shall break down their approach into a PWBS which must encompass the entire Phase I effort (development and integration) through the completion of prototype test and evaluation. The PWBS shall be traceable to the SOO. Using the matrix in Enclosure B to Attachment 1, offerors shall divide the Phase I PWBS into Category 1 - Engine Development Work and Category 2 - Integration Work. "Category 1 - Engine Development Work" is generally defined as the efforts required to design, develop and produce a prototype engine and the engine specific interfacing hardware to make the engine compatible with both vehicles. "Category 2 - Systems Integration Work" is generally defined as the system integration efforts, including other propulsion system/power pack hardware (such as transmission development), and/or vehicle hardware interface changes, prototype application, system level software and vehicle level testing, etc. For Crusader, the Army's intent is to contract for the Category 2 work through the systems integration contractor (UDLP) with a directed subcontract for transmission development to the offeror selected in response to this RFP. For Abrams, Category 2 may be contracted for under the option for this contract (CLIN 0004AA) and/or with the systems integration contractor (GDLS). Guidelines for development of a PWBS and a CWBS can be found at

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www.acq.osd.mil/pm/newpolicy/wbs/wbs.html.

L.2.3.2 The PWBS should be further divided into common and system unique efforts to allow the segregation of system unique work and cost from common work and cost so that Abrams and Crusader appropriated funds can be properly placed against the corresponding system unique work.

L.2.3.3 The offeror shall break down the PWBS for all Category 1 - Engine Development Work into its lowest task level under a CWBS for both Common and System Unique efforts.

L.2.4 Section 3 - Proposed Contract Scope of Work The offeror shall link the CWBS tasks in a logical flow of activities to form the Scope of Work (SOW). The offeror's proposed SOW will replace the Section C SOO herein and form the Section C SOW for the resulting common engine contract. The SOW shall include the delivery of 13 prototype engines for Abrams and 11 prototype engines for Crusader. The engines to be developed for each vehicle system must include all engine specific interfaces, accessories, and modifications that are required to make the engine compatible with each vehicle system. The SOW shall result in the completion of validated production specifications, drawings and ICDs that reflect a final design that meets the program objectives stated in C.1.1.

L.2.4.1 For Abrams, the Army may consider it advantageous to include some or all of the Abrams unique "Category 2- Integration Work " under the contract if the offeror clearly demonstrates its capability to successfully perform such work, either through its own capabilities or through established subcontracts. Therefore, for the Abrams Phase I development effort, the offeror may propose a CWBS and corresponding SOW for any or all "Category 2 - Integration Work". However, if an offeror's common propulsion system solution requires a new Abrams transmission or modification to the existing Abrams transmission, a Category 2 proposal is required for the transmission. In the event a Category 2 proposal is made, a separate SOW shall be developed for the Abrams "Category 2 - Integration Work".

L.2.4.2 The award of any Abrams "Category 2 - Integration Work" will be at the Government's option. To be eligible to receive the Abrams "Category 2" work, the offeror must separately describe and price the Abrams "Category 2" work in the proposed SOW, structured according to a detailed CWBS and traceable to the PWBS and the appropriate portions of the SOO. In addition, the offeror shall provide performance characteristics/specifications that clearly describes all additional hardware to be produced under the contract. If the offeror proposes to perform the entire Phase I development and integration effort for Abrams under this contract, it shall comply with the system level performance specifications at Enclosures A and E of Attachment 5. This effort will be contracted for under CLIN 0004AA.

L.2.4.3 For the Crusader development effort, the Government will not award any "Category 2 - Integration Work". However, the offeror shall propose a CWBS and corresponding SOW for the transmission development effort, which the Army intends to acquire under the existing Crusader System Development contract with UDLP. Any other Category 2 work necessary for Crusader will also be acquired under the existing Crusader System Development contract with UDLP. To that end, the government intends to provide the successful offeror's information to UDLP to facilitate awarding a sub-contract to the offeror.

L.2.5 Section 4 - Contract Performance Specifications and ICDs: The offeror shall provide performance specifications, or at a minimum, the detailed performance characteristics of the items to be furnished under the contract. The specifications/characteristics should reflect the objective production configuration. The offeror's SOW shall also include the development, maintenance and delivery of Interface Control Documents (ICDs) that define all interfaces between the engine, other hardware furnished under this contract, and all other vehicle subsystems. There will be two types of ICDs submitted with the offeror's proposal:

L.2.5.1 The B-kit ICDs define the interface between the common engine and each vehicle's engine specific attaching or interfacing components that are required to accommodate the specialized configuration and operational requirements of the Abrams and Crusader. The B-Kit ICDs will become part of the contract at the time of award.

L.2.5.2 The A kit ICDs define the interfaces between the common engine and the rest of the vehicle system, after the engine is configured with the engine specific Abrams and Crusader attaching or interfacing components.

L.2.6 Section 5 - Solicitation Sections: Under this section the offeror shall include solicitation Sections A through K with all fill-ins completed, the Section B price fill-ins and the signed Standard Form 33.

L.3 Technical Volume:

L.3.1 General: Offerors shall describe the objective production configuration propulsion system solution for Abrams and fully integrated power pack for Crusader. The offeror's description shall be of sufficient detail to allow the Army to understand and determine the technical risk and the technical merit of the offeror's proposed solution with regard to the evaluation criteria in Section M. Note that all enclosures referred to under this technical volume are found in Attachment 5 to the solicitation.

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L.3.1.1 The offeror's description shall include: CAD-generated conceptual designs consisting of 2-D engineering drawings and 3-D solid models; appropriate completed data description sheets given in Enclosure C of Attachment 5 for Abrams and Enclosure D of Attachment 5 for Crusader, for the engine and transmission used in their approach; additional data and specifications for components used in the design solution which are not addressed in the enclosures in Attachment 5.

The engineering drawings and solid models shall be accompanied by and traceable to a preliminary Bill of Materials (BOM). The BOM and engineering data package will be used by the government to analyze and evaluate the risk and merit related to the "Size and Weight", "Performance Mobility", and "Vehicle Integration" elements as well as a cost realism assessment of the proposed design.

L.3.2 Element 1 Size and Weight: The offeror shall describe its design approaches for meeting Abrams and Crusader size and weight requirements. The Army will evaluate the drawings and the BOM described below to assess the feasibility/achievability of meeting these size and weight requirements. In addition, the offeror shall complete Data Sheet #5 in Enclosure C for the Abrams vehicle weight analysis. For Abrams, the proposed propulsion system solution, when integrated with all associated subsystems shall not exceed the total weight of the engine and all other subsystems or components displaced from the vehicle as shown in Attachment 5, Enclosure C.5. For Crusader, the wet weight of the engine, transmission, complete cooling system and on-board fuel (defined in Enclosure F, para. 3.2.2.2.1) shall not exceed 10,000 lbs as specified in M.3.2.

L.3.2.1 For Abrams, the Army will allow limited changes to the Abrams engine compartment as shown in Enclosure A, Attachment 5, to accommodate solutions under the following restrictions:

a. The external dimensions of the engine compartment shall not expand forward into the ammunition compartment, expand laterally to cause an increase the total width of the tank, downward to cause a decrease in the current ground clearance or upward to interfere with gun depression or turret movement.

b. The external dimensions of the back deck and rear grille doors may extend rearward provided that there is no degradation in system survivability or transportability.

L.3.2.2 Bill of Materials (BOM): The offeror shall clearly delineate the physical compositions of the proposed integrated solution by providing a matrix which reflects the proposed (1) BOM for each vehicle, (2) the weight of each component in the BOM, and (3) technology maturity level of each component.

a. The BOM shall include all propulsion system/integrated power pack components defined in C.1.3 and C.1.4 indented by level of assembly including required external interfaces such as hull connection points/mounting provisions; power pack cooling including heat exchangers (sized), cooling lines, fans/fan motor controllers (and fan power requirements), oil and coolant tanks, and plumbing/ducting/plenums; air induction and filtration; exhaust ducting; fuel lines; drive-by-wire actuators/controllers; starter; wiring harnesses; power take-offs (PTOs); mechanical, electronic and cooling disconnects.

b. The offeror shall describe the maturity of the design with regard to the objective production configuration for each vehicle. The technology maturity levels in the matrix should be defined as: (1) "Concept", (2) "Design", (3) "Development", (4) "Mature not produced", and (5) "Production". In addition, the offeror shall describe any design maturation/technical growth required to achieve the objective form, fit and function.

L.3.2.3 Drawings: The offeror shall provide dimensioned propulsion system/power pack layouts and component drawings, including placement and packaging of all key automotive subsystems within the space claim provided for Abrams at Enclosure A and for Crusader at Enclosures F.1 and F.2. Drawings shall be submitted in electronic format. Component level drawings shall include major components such as the engine, transmission, cooling system components, air induction and exhaust. The drawings shall show at least three full views with components and clearances identified. The offeror shall provide additional drawings of the vehicle configuration changes required (if any) by their design approach. For Crusader, the integrated system shall include the power pack mounted on a roll-in/roll-out mechanism.

a. The offeror shall develop the 2-D engineering drawings and 3-D solid models using one of the following platforms.

1. Unix Workstation Hardware (preferred)
2. NT Workstation Hardware

b. The offeror shall document all 2-D engineering drawings and 3-D solid models in one of the following formats.

1. Pro/ENGINEER Rev 2000I, by Native Parametric Technology, INC (preferred)
2. STEP AP 203 format
3. DXF (for 2-D engineering drawings)
4. IGES (for 3-D solid models or drawings)

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c. The offeror shall submit all 2-D engineering drawings and 3-D solid models on one of the following media types:

1. 8mm tar (UNIX, preferably from an SGI) Data Grade Tape Cartridge (preferred)
2. CD-R disk (either NT or Unix /Joliet Format)
3. 4mm tar (UNIX, preferably from an SGI) Data Grade Tape Cartridge
4. Zip disk(s) from NT
5. Jaz disk(s) from NT

L.3.3 Element 2 Propulsion System Performance: The offeror shall complete the compliance matrix corresponding to the requirements in the Abrams and Crusader performance specifications at Enclosures E and H, respectively. In the event of similar system requirements for both Abrams and Crusader, the more stringent specification requirement shall govern. Performance specifications shown in Enclosure E for Abrams supercede performance specifications shown in the system specification in Enclosure A. The offeror shall note in the compliance matrix whether its approach meets the specification requirement, state the requirement value and/or range of values achievable for the proposed approach and reference the basis for each assessment (i.e. Level 1-Engineering Judgement, Level 2-Engineering Analysis, Level 3-Interim Test data, Level 4-Objective Test). The Government reserves the right to request the support documentation for any such assertions to be provided within 5 days of the Government's request. For the purpose of this evaluation, the performance requirements are divided into two factors.

L.3.3.1 Factor 1 Threshold Requirements must be met without exception. For Abrams, as stated in Enclosure E, these are Mobility System Function (para 1.0), Idle Fuel Consumption (para 1.1.1), Cruising Range (para 1.1.2), Steering and Braking (para 1.1.3), Sustained Speeds (para 1.1.4), Tractive Effort Cooling (para 1.1.5), Starting (para 1.1.6), Fording (48") (para 1.1.7), NBC System Air Requirement (para 1.1.8), Physical Requirements (para 1.2), Induced Environment (para 1.3), Transportability (para 1.4), Engine Controls (para 1.5), Durability (para 1.6), and Reliability (para 1.7); and for Crusader, as stated in Enclosure F, Speed on Grade (para 3.2.1.1.4), Survivability Move (Para 3.2.1.3.1), Steering and Braking (para 3.2.1.2), Cooling (para 3.2.1.3.5) and Towing Another Vehicle (para 3.2.1.3.6). The offeror shall demonstrate conformance with these requirements by providing the following information:

L.3.3.1.1 In addition to the data provided by the compliance matrix, the offeror shall demonstrate conformance each of the threshold requirements stated above by: describing in detail their approach; showing detailed engineering analysis including all assumptions , calculations; Providing complete data sheets 1 or 2, and 3, 4, 6, 7 and 8 from Enclosure C for Abrams and 1 or 2, and 3, 4, 5, 6, and 7, and from Enclosure D for Crusader; Providing any additional component data used in system design that is not included in data sheets of Enclosure C and D .

L.3.3.1.2 With regard to the threshold requirement for "cooling" (paragraph 1.1.5 of Enclosure E and paragraph 3.2.1.3.5 of Enclosure F), offerors shall provide detailed cooling system descriptions and schematics (in accordance with Data Sheet 4 in enclosure C for both Abrams and Crusader) to include airflows, coolant flows, pressure losses, heat exchangers (heat rejection, face area, size), fans/fan motor controllers, fan power requirements, fan locations. Descriptions shall also include oil and coolant tank requirements, grille size, weight and location requirements and plumbing/ducting/ plenums requirements. The schematic is to be completed for three Abrams mobility points: maximum vehicle speed and cooling requirement design point of .7 TE/WT @ 125-F, NBC off and .67 NBC on @ 125 ?F, continuous full throttle tractive effort. Crusader schematics shall be completed for all operating conditions within the tractive effort to weight vs. speed envelope defined by 0.7 TE/GVW at continuous full throttle and 67 kph (41.6mph). For Crusader, the offeror shall provide speeds at 49 degrees Celsius for all points on the speed-on-grade curve shown in table 3.2.1.1.4, Enclosure F, Attachment 5.

L.3.3.1.3 Reliability/Durability: With regard to the Abrams Threshold and Crusader Objective requirements for reliability/durability (R/D), the offeror's approach will be evaluated to assess the propulsion system/power pack's current or projected capability to meet the R/D requirements of both Abrams and Crusader in accordance with the R/D assumptions in Enclosure E to Attachment 6. The offeror's proposal should provide sufficient data/predictions to allow the Government to understand the baseline inherent R/D of the propulsion system/power pack, and the growth required to achieve Abrams threshold/Crusader objective reliability requirements specified in Attachment 5, Enclosure E, paragraphs 1.6 and 1.7 for Abrams, and Attachment 5 enclosures F paragraph 3.2.3 for Crusader. The offeror shall provide:

L.3.3.1.3.1 Predictions of matured propulsion system/power pack failure rates or mean-time-between-failure (MTBF) in terms of mission reliability (Combat Mission Failures or System Aborts), non-deferrable, performance degrading failures (System Failures or Essential Function Failure), and basic reliability (Unscheduled Maintenance Actions or Non-Essential Function Failures). The offeror should include the prediction methodology, list of assumptions, duty cycles, mission profiles, and sources for base failure rate data. Predictions should be presented at the subassembly, assembly, and subsystem levels.

L.3.3.1.3.2 A description of the offeror's approach for failure reporting and corrective action identification and tracking.

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L.3.3.1.3.3 Empirical data, if any, summarizing the R/ D performance (in the parameters described above) of the propulsion system/power pack during brassboard/prototype and/or developmental testing. Such data should include the test item quantities, mission profiles, test duration, test environment, and any International Test Operating Procedures (ITOP) followed, if applicable. The failure definitions and scoring criteria used to establish the performance measurements shall be provided.

L.3.3.1.3.4 If Failure Mode, Effects and Criticality Analyses (FMECA) are generated, summaries of catastrophic and critical failure modes should be discussed, with mitigation plans, if known.

L.3.3.1.3.5 Service Life or durability calculations and or estimates for those components or subsystems seen to be life limited, including the mission profile assumed during service. Durability failures are defined as propulsion system/power pack malfunctions that require the use of repair parts and skills authorized for echelons (Fourth and Fifth) at the Sustainment Maintenance Level. A durability failure is also charged when engine power degrades below 60% of its rating and cannot be restored by adjustment, maintenance action or by replacement of parts (i.e. filters, seals, fasteners) at authorized echelons (First through Third) of Tactical Field Maintenance Levels.

L.3.3.1.3.6 Reliability Growth methodologies used to plan, track and assess the engine/power pack growth through development, including the growth curves, if available.

L.3.3.2 Factor 2 Objective Requirements consist of the remaining system performance requirements. In addition to the data supplied by the compliance matrix, the offeror shall describe their approach to meeting the objective requirements and provide any additional engineering analysis and additional component data used in system design that is not included in data sheets of Enclosure C and D to support their design solution. For Abrams, Data sheet 6 and 9 must be completed for the BFD assessment.

L.3.3.2.1 While the offeror is expected to propose a solution that fully meets all requirements, the Government is interested in acquiring a best-value solution that balances performance, cost and schedule risk. Therefore, the Government will consider performance trade-offs for objective requirements only if the offeror clearly substantiates the off-setting benefits to the Government. The offeror is cautioned that any proposed performance trade-off must have compelling performance improvements in other areas, significant cost benefits, and/or significant schedule benefits to be considered desirable by the Government. Any trade-off proposed by the offeror shall be accompanied by a trade-off analysis that provides rationale for the proposed trade-off and clearly substantiates the benefits to the Government.

L.3.3.2.2 In addition to the data requested in the compliance matrix, the offeror shall describe their Abrams design solution for:

- a. Supplying compressed air to the existing Abrams NBC system
- b. Providing power for the Abrams hydraulic system
- c. Providing electrical power generation
- d. Providing continuous clean air to the engine.
- e. Propulsion system lubrication design for Abrams

L.3.4 Element 3 Propulsion System Integration: The Government will assess the extent and complexity of the integration effort by evaluating the interface requirements for each vehicle, as well as, the Abrams "puts" and "takes", and ease of field application for Abrams.

L.3.4.1 Interface Requirements: The offeror shall provide a preliminary Interface Control Document with associated drawings, charts, data, layouts, and methodology required to define interfaces between the proposed propulsion system/power pack and all other vehicle system elements as described in C.4.

L.3.4.2 Puts and Takes: The offeror shall provide a list of "puts" and "takes" for the Abrams propulsion system and vehicle system (e.g. fuel cells, fire suppression, grilles, etc.) in accordance with Enclosure G. Offerors shall generally explain the methodology and rationale for the "puts" and "takes" with emphasis on any significant vehicle design and performance impacts associated with the list of "puts" and "takes". If additional vehicle weight data for Abrams is required, the offeror must request the data within 30 days of receipt of RFP. The Government will provide the additional data within 5 days of receipt of the request.

L.3.4.3 Field Application for Abrams: The offeror shall describe the approach for installing the new propulsion system in fielded tanks using the field application assumptions in Enclosure D to Attachment 6 as a baseline. The offeror shall describe the application process and the manpower, time and tools required to perform each operation of the process.

L.4 Logistics Volume

L.4.1 General: The offeror shall summarize its overall approach to implement a performance based contractor logistics support

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effort. The offeror's summary shall be organized in a way that takes the Government evaluator through the life cycle support concept (from development of logistics documentation through the maintenance and long term supply support concept) as it relates specifically to the offeror's proposed propulsion system solution for each vehicle. Offerors shall base their logistics approach on the assumptions provided in Attachment 6. The offeror's description of the overall logistics concept shall specifically address each of the logistics elements noted below.

L.4.2 Element 1 - Commonality: The offeror shall complete the data sheet at Enclosure B to Attachment 6 to identify the (1) Proposed degree of core engine interchangeable parts between Crusader and Abrams, (2) Proposed degree of Major Component interchangeable parts between Crusader and Abrams.

L.4.3 Element 2 - Maintainability:

L.4.3.1 Factor 1 Ease of Maintenance: The Offeror shall describe the frequency and complexity of the maintenance burdens related to its proposed approach. The offeror's description should focus on its concept for developing, documenting, validating, and updating maintenance tasks throughout the Phase I development process as well as its plan for minimizing the maintenance tasks.

L.4.3.1.1 The Offeror shall provide a draft Maintenance Allocation Chart (Enclosure H, Attachment 6) in accordance with the Army's two level maintenance concept (Enclosure A, Attachment 6) to identify the anticipated scheduled and unscheduled maintenance tasks with a description of the skills and tools required to perform such tasks.

L.4.3.1.2 Predictions of matured propulsion system/power pack mean-time-to-repair (MTTR) data for each line replaceable unit and maintenance ratio (MR) predictions, in terms of maintenance man-hours per operating hour, as well as levels of repair (Unit, Direct Support, General Support). Any known or anticipated scheduled maintenance or PMCS burdens shall be documented.

L.4.3.2 Factor 2 Diagnostics/Prognostics: The offeror shall describe its overall approach for diagnostics and fault isolation including the "on-board," built-in fault isolation/diagnostic/prognostic features of the proposed approach. The offeror must address the integration of each of the sensors and signal/recorders listed in Enclosure C to Attachment 6. The offeror shall describe any development efforts required to include such features in the proposed approach and its experience developing similar features for any existing propulsion systems. The Offeror shall provide a list/description of all additional "off-board" special tools and test measurement and diagnostic equipment required to support its proposed propulsion system. The Offeror shall describe its approach to ensuring that off-board electronic diagnostics are compatible with both the Integrated Family of Test Equipment, (IFTE) and the Direct Support Electrical System Test Sets, (DSESTS).

L.4.4 Element 3 Sustainability: The concept/approach for supporting the propulsion system hardware throughout its life cycle shall be assessed based on two factors: (1) Supply Support and (2) Logistics Documentation.

L.4.4.1 Factor 1 Supply Support: The offeror shall describe its concept for meeting the spare and repair part requirements to comply with the Army's goal of 90 percent operational readiness. This description must include a discussion of the viability of the supplier base for critical components and the approach for managing obsolescence. In addition, the offeror shall describe any emerging technologies that may have applicability to the proposed solution and its approach to assess and continually insert emerging technology into the design.

L.4.4.1.1 The offeror shall describe its plan/strategy to insure standardization and interoperability, to include lubricants. The Army will assess the degree of standardization with current parts in the Army/DoD inventory as proposed in the Commonality Matrix (Para. L.4.2). The offeror shall explain the methodologies employed to determine/approximate the above parts standardization data and describe plans for maximizing commonality between components/parts and other US Army/DOD systems throughout the design and development process.

L.4.4.2 Factor 2 Logistics Documentation: The offeror shall describe the proposed approach for developing, maintaining and delivering Provisioning Technical Data, Depot Maintenance Work Requirements and Technical Publications to the Government and System Integrators. The Offerors shall describe their approach to interfacing with the systems integrators IETM efforts and a stand alone level 5 IETM for Abrams.

L.5 Contract Performance Capability Volume:

L.5.1 The Contract Performance Capability Volume should be divided into Three Sections: Section 1 is the Development and Production Capability information, Section 2 is Qualifications and Past Performance, and Section 3 is Small Business Participation.

L.5.2 Element 1 Development and Production Capability:

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L.5.2.1 The offeror shall summarize its development and production plan for a propulsion system/power pack and provide a Phase I Preliminary Integrated Master Plan (IMP) and Preliminary Phase I and Phase II Integrated Master Schedule (IMS). The preliminary IMP must cover the Phase I effort through completion of Government vehicle prototype testing and be traceable to the PWBS. The preliminary IMS must cover all of the Phase I and Phase II major milestones through full-scale production. The preliminary IMP for Phase I will be included in the contract to form the baseline for the final document that will be prepared and maintained under the contract. The preliminary IMP and IMS will be evaluated, along with the additional information requested below, to assess the performance capability and schedule risk.

L.5.2.2 Factor 1 Development Plan: The offeror shall summarize its development plan with emphasis on the proposed application of integrated process and product development (IPPD). The IMP shall describe the key program events and accomplishments/ accomplishment criteria associated with those key events identified in the IMS. The preliminary IMS must include the critical path for the completion of the entire Phase I development effort with all key milestones noted in accordance with paragraph L.5.2.4. The offeror's preliminary IMP shall generally describe the systems engineering approach that will be implemented for Phase I, and specifically highlight the following key aspects of its Phase I systems engineering approach.

a. Modeling and Simulation: The offeror shall describe the planned models and simulations to be used to support engine, transmission and power pack engineering development, systems engineering, specialty engineering and test. The offeror's proposal should describe how the cost-effective application of models and simulations will streamline development and increase the Government's confidence in the ability of the power pack to meet its objective requirements.

b. Performance Metrics: The offeror shall describe its proposed implementation of performance metrics. The offeror shall list the key technical performance measures (TPMs) and supporting technical performance parameters (TPPs) to be tracked during development. Included with the TPMs and TPPs shall be the offeror's proposed "Success Criteria" for products delivered during Phase I and proposed "Transition Criteria" for moving from Phase I to Phase II. The "Success Criteria" will define the level of performance the offeror expects the delivered products to achieve in order to declare full accomplishment of the technical effort during Phase I. The "Transition Criteria" will define the programmatic goals (i.e., technical, cost, weight, RAM) required for a low risk transition to Phase II in support of the Crusader EMD and Abrams fielding schedules.

c. Risk Management/Metrics: The offeror shall describe its proposed approach for managing program risk. The offeror shall identify the program technical, cost and schedule risks for hardware and software related to the key milestones noted on the critical path, their risk ranking and a general description of the risk mitigation plans proposed to reduce these risks early in the program.

d. Cost Management/Metrics: The offeror shall describe its proposed approach for implementing cost-as-an-independent-variable (CAIV) and its processes for managing/minimizing development, production and acquisition cost. The offeror shall establish a design-to-unit-rollaway-cost (DTURC) objective and manage to this objective throughout development. The offeror's proposal shall include its DTURC target with the projected glide-path and planned activities for achieving this glide-path and DTURC target. The mutually agreed upon DTURC will be used as part of the Life Cycle Cost award fee incentive agreement. The offeror shall describe processes to be used for managing life cycle cost (LCC) in order to minimize the Army's total ownership cost (TOC).

e. Weight Management/Metrics. The offeror shall describe the proposed approach for managing weight. The offeror's proposal shall include its Design-to-Weight (DTW) target with the projected glide-path and planned activities for achieving this glide-path and DTW target. The mutually agreed upon DTW will be used in the award fee incentive agreement

f. Reliability/Maintainability/Durability Management/Metrics: The offeror shall describe the proposed approach for managing power pack reliability/durability. The offeror's proposal shall include its RAM target with the projected glide-path and planned activities for achieving this glide-path and RAM target.

g. Integrated Management Framework: The offeror shall describe the technical and management processes for interfacing with the Army and the System Integrating Contractors under the contract, including plans/processes for completing the interface control document and achieving issue resolution across programs/contracts. The Army is particularly interested in the offeror's approach for managing requirements and interfaces across programs and contracts. The offeror shall describe plans/processes for maintaining requirements and interface control with Crusader and Abrams, and for managing changes to these requirements and interfaces as the system design evolves and matures. The offeror shall describe the technical and management processes for interfacing with the Army and the System Integrating Contractors to ensure that the common engine configuration is maintained. The achievement of proposed commonality and the further maximization of commonality will be used in the Award Fee Incentive Agreement.

L.5.2.3 Factor 2 Production Capability and Depot Overhaul Plan: The offeror shall identify prior experience transitioning high-power propulsion systems prototype designs to producible and cost reasonable production configurations. Specifically, the offeror shall discuss any experience with mass production, and the offeror's application of this experience to the ACCE Program

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related to production planning and facility layout for both the production facility and Government's Depot Overhaul facility at Anniston Army Depot.

L.5.2.3.1 Production Transition: The offeror shall assume that production will be required within North America. The offeror shall describe its approach for production transition. Within that approach the offeror shall identify whether the major components will be manufactured in existing facilities with existing tooling or if new facilities and/or tools will be required to meet production delivery requirements as specified in Enclosure B to Attachment 2. For each piece of equipment the offeror shall identify whether that equipment is currently available or will be acquired for the production under the Phase II production contract. The source and procurement leadtimes shall be provided for any additional major pieces of equipment that are needed to meet the Phase II production schedules.

L.5.2.3.2 Depot Overhaul Plan: The offeror shall provide a maintenance concept that should consider the use of Anniston Army Depot for repairs/overhauls of major automotive parts that are not repairable below depot level. Based on the facility and Government Furnished Equipment assumptions at Enclosure F to Attachment 6, the offeror shall identify all equipment that is required to support the approach.

L.5.2.4 Integrated Master Schedule (IMS): The offeror shall detail the critical milestones and events required to meet both the Phase I - Prototype Contract and the Phase II - Production Contract objectives. The offeror shall use the Government's production schedule and program schedule at Enclosure A and B of Attachment 2 as a guideline for development of its specific milestone schedule.

L.5.2.4.1 The Phase I portion of the IMS shall identify key program events from individual component design development, through Government acceptance of prototype hardware for vehicle integration and test and finally testing/test vehicle corrections. The Phase I IMS shall, at a minimum, individually identify the following events:

- a. System Design and Engineering milestones, including all Design Reviews
- b. Prototype fabrication
- c. Engineering Specifications suitable for procurement for long lead (supply lead time of over 90 days) prototype hardware and fabrication tooling
- d. Award long lead prototype material/tooling subcontracts
- e. Receipt of prototype long lead material/ tooling deliverables
- f. Contractor component and power pack testing
- g. Vehicle integration and application
- h. System Level Test and Evaluation, including Test Readiness Reviews
- i. Completion of Logistics Data Planning and Reviews
- j. Completion of Manufacturing and Facilities Planning Development and Delivery of all preliminary Logistics Documentation, including preliminary electronic Technical Manuals
- k. Design, Procurement and Delivery of Special Tools and Test Equipment
- l. Development of an initial spare parts list
- m. Development of preliminary Training Documentation and Completion of Maintenance Training Devices/simulators
- n. Production Transition IPR

L.5.2.4.2 The Phase II portion of the IMS shall identify key program events to reach a production capability of 40 units per month and to have a logistics support structure in place before deliveries begin. The Phase II IMS shall identify the Phase II critical path and, at a minimum, individually identify the following events:

- a. Manufacturing facilitization
- b. Long Lead Material and Tooling Procurements including the following events:
 - 1. Complete Engineering design of component/tooling
 - 2. Development Engineering Specifications suitable for procurement
 - 3. Issue Purchase Request
 - 4. Receipt of Quotes
 - 5. Award Material/tooling subcontract
 - 6. Receipt of long lead material/ tooling deliverable
 - 7. Completion of prime contractor dressing of material/tooling
 - 8. Introduce material/tooling to production process
- c. First Article Testing

L.5.3 Element 2 Past Performance:

L.5.3.1 Past performance consists of Past Performance Questionnaires completed by the offeror and cognizant Contracting

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Officer's Representative (COR), and Procuring Contracting Officer (PCO). The offeror shall distribute the Past Performance Questionnaire (attached at the end of Section L of this solicitation) and include past performance references for each contract listed in their response to paragraph L.5.3.2.3 below. In addition, the offeror shall send a copy of the Past Performance Questionnaire directly to the cognizant Contracting Officer's Representative (COR) and Procuring Contracting Officer (PCO) on the projects you and /or your subcontractors have completed during the last ten years that are in any way relevant to the effort required by this solicitation. The offeror shall request the COR and PCO complete the questionnaire. All completed questionnaires (including self-assessment) shall be forwarded to the contract specialist via email to seeburgr@tacom.army.mil no later than ten (10) days before the due date of this solicitation. The Contracting Office will contact those offices that do not respond to the questionnaire.

L.5.3.2: Description of the Organizational Qualifications: Offeror shall describe its corporate background, knowledge and experience related to design, development, integration and production of high power propulsion systems (over 1000 hp). Describe the organization that will perform this effort.

L.5.3.2.1 Offerors shall provide an outline of how the efforts required by this solicitation (such as design, development, integration, testing, etc) and/or major components (engine, transmission, etc) will be assigned for performance among proposed sub-contractors who will perform a significant portion of the effort. "Significant" is defined for these purposes in terms of estimated dollar amount of the subcontract and/or in terms of criticality of the subcontracted work to the whole. Offerors shall include in their proposal the written consent of their proposed subcontractors to allow the Government to discuss the subcontractor's past performance evaluation with the offeror during evaluations.

L.5.3.2.2 List previous commercial and/or military contracts, with appropriate description, that demonstrates that such corporate entities/divisions or proposed sub-contractors have performed similar efforts and provide discussion regarding accomplishment of the efforts that demonstrates subject matter knowledge. Identify whether those divisions have relocated since the accomplishment of previous contract efforts, and provide a description of any changes arising from that relocation in terms of key personnel, facilities and equipment.

L.5.3.2.3 List and describe all projects you and/or your subcontractors have completed during the last five years that are in any way relevant to the effort required by this solicitation. You may list and describe projects of a proposed subcontractor, provided you obtain a Letter of Intent to Perform from the subcontractor and the letter is included with your offer. The list shall identify:

- a. Contract number and brief description of the scope of work;
- b. Purchasing office (Government Agency or Commercial Firm);
- c. Cognizant Procuring Contracting Officer, or Purchasing Agent, Administrative Contracting Officer (ACO), Technical Representative and addresses, telephone numbers and e-mail addresses;
- d. Contract type, terms and values of contracts;
- e. For other than firm fixed price contracts, the estimated or target cost, and the actual experienced costs;
- f. Compliance with original delivery schedule;
- g. Provide a listing (annotated with the above information) of all contracts terminated or in the process of being terminated;

NOTE: Information pertaining to items a. through g. shall be provided for all proposed subcontractor(s) whose effort(s) will exceed ten percent (10%) of the basic level of effort and/or estimated cost in any one year of contract performance;

h. For each contract cited in response to the above, describe the statement of work, similarities of that work with the work required by this solicitation, objectives achieved, and cost growths or schedule delays encountered for the Government contracts which did not/do not meet original requirements with regard to either cost, schedule, or technical performance, a brief explanation of the reason(s) for such factor(s) and any corrective actions taken to avoid recurrence;

i. The offeror shall also provide all the above required information for any and all contracts it has had terminated in whole or in part, for any reason during the past five years, to include those currently in the process of such termination as well as those which are not similar to the proposed effort;

Note: Offerors are reminded that both independent data and data provided by offerors in their proposals may be used to evaluate

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offeror's past performance. Since the Government may not necessarily interview all of the sources provided by the offerors, it is incumbent upon the offeror to explain the relevance of the data provided. The Government does not assume the duty to search for data to cure problems it finds in proposals. The burden of providing thorough and complete past performance information remains with the offerors. Proposals that do not contain information required by this paragraph risk rejection or high risk rating by the Government.

L.5.4 Element 3 - Small Business Participation.

L.5.4.1 Offerors are to identify the extent to which small businesses (SBs), small disadvantaged businesses (SDBs), woman-owned small businesses (WOSBs), historically black colleges/universities or minority institutions (HBCU/MIs) and Hub Zone concerns will be utilized in the performance of this proposed contract. For small businesses, as defined by the Standard Industrial Code, as defined by the USC and the FAR, applicable to this solicitation, the offeror's own participation as a SB, SDB, WOSB, HBCU/MIs or Hub Zone concern is to be identified, and will be considered in evaluating small business participation.

L.5.4.2 The offeror is to address the following factors in detail.

a. The names of SBs, SDBs, WOSBs, HBCU/MIs or Hub Zone concerns who would participate in the proposed contract, identifying specific components to be produced or services to be performed by them, and the estimated total dollars of such work;

b. A description of the offeror's performance, over the past three calendar years, in complying with the requirements of FAR 52.219-8, including description and available documentation of the methods employed to promote small business utilization and the internal methods used to monitor such utilization.

L.5.4.3 Offerors who are large businesses, as defined by the Standard Industrial Code applicable to this solicitation, are also to provide a description of their performance over the past three calendar years in complying with the requirements of FAR 52.219-9, including documentation of their accomplishment of the goals established under Subcontracting Plans of prior contracts.

The subcontracting plan shall be submitted with the offeror's proposal. Large businesses which have never held a contract incorporating FAR 52.219-9 shall so state.

L.6 TOTAL OWNERSHIP COST

L.6.1 Volume V: Total Ownership Cost (TOC). The Total Ownership Cost Volume shall include the data necessary to determine the reasonableness, realism and affordability of the proposed costs. The Government will develop a most probable cost from its evaluation of the offeror's proposal. The evaluation for reasonableness, realism and most probable cost seeks to determine whether the proposed costs accurately reflect the offeror's specific technical approach. Important aspects of the cost proposal include the following:

a. The estimated cost to the Government must reflect the use of prudent judgement and sound business practices. Sound business practices include compliance with governing acquisition regulations (FAR/DFARS) and proper estimating and accounting of costs.

b. The estimated cost must be consistent with the offeror's technical volume. The consistency between the offeror's cost and its technical approach reflects upon the offeror's understanding of the effort and their ability to perform in accordance with the statement of work. Any inconsistency, if unexplained, raises a fundamental question as to the offeror's understanding of the effort and their ability to perform at the stated cost.

L.6.1.1 Submit the TOC Volume including summary level cost sheets. Your submission must use Microsoft Excel 97/95 or a file format acceptable to the Contracting Officer. Submitted spreadsheet files must contain all formulas, computations or equations used to compute the proposed amounts. Print image files or files containing only values are not acceptable.

L.6.1.2 All costs must be in U.S. dollars only, including amounts for the prime contractor and any subcontractors. If the basis for the proposal is any other currency, the offeror shall:

- a. State the exchange rate(s) used to convert any currency to U.S. dollars.
- b. Explain how you intend to deal with the risk that fluctuations in currency exchange rates may impact this prospective contract.

L.6.1.3 Offerors must submit a proposal that provides, at a minimum, the level of cost information for each element, and section within the element, in accordance with the instructions provided in Section L.6.4, Presentation of Cost Data.

L.6.1.4 The offeror shall be held accountable for the validity of all information supplied in their proposal. The Government

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does not assume the duty to search for data to cure problem areas it may find in the proposal. The burden of providing thorough and complete cost information remains with the offeror. Should subsequent investigation uncover that the facts and conditions were not as stated, the proposal may be rejected.

L.6.1.5 In addition to the copies submitted to TACOM, the offeror shall concurrently submit one (1) copy of its TOC Volume to its cognizant DCAA or DCMAO office. The offeror shall provide notification within its proposal as to which office/agency this information was sent along with a point of contact, phone number and e-mail address.

L.6.2 Proposal Structure: The instructions that follow are not intended to be restrictive or all inclusive. Offerors may submit any other cost or financial information they consider useful in the evaluation of their proposal. It is requested that the offerors comply (to the extent they can) with the Government's cost schedule format (Attachment 3/Enclosure F) to facilitate the review of the competitive proposals. Separate cost schedules must be submitted for each element and section of that element.

L.6.2.1 In regard to Element 1, Operations and Support, offerors shall submit a detailed O&S cost estimate. For Abrams, O&S cost is for engine only. For Crusader, O&S cost is for the entire powerpack. Elements 2 and 3 of the TOC area are consistent with the procurement's two phase approach which is discussed in the Executive Summary of the solicitation. Phase I (Element 3) covers the development, fabrication, integration, application and testing of the prototype systems along with the required logistics and technical prototype test support. The contract type for Phase 1 is Cost Plus Award Fee (CPAF). Phase 2 (Element 2) of the program will be for production and logistics support. Offerors shall submit detailed production cost estimates for each program year in accordance with the production/retrofit schedule provided in Attachment 2/Enclosure B of the solicitation. Though the estimates supplied for Element 2 (production cost estimate) are not contractually binding, they will be used, in conjunction with the developmental costs, to develop the Government's most probable cost.

L.6.3 Element/Section Profile. The following elements and their sections comprise the TOC area of the evaluation. Offerors shall note that at the section level, costs must be identified separately (where requested) for the Abrams and Crusader programs so that appropriated funds can be properly allocated against each system's cost liability.

Element 1: Operations and Support

Section 1: Spare and Repair Parts

Section 2: Petroleum, Lubricants and Oil (POL).

Element 2: Phase II Production

Section 1: Production Costs

Section 2: Production Category 2 Application Work.

Element 3: Phase I Development

Section 1: (CLIN 0001AA) Common Engine Design and Development.

Section 2: (CLIN 0002AA) Unique Abrams Engine Design and Development.

Section 3: (CLIN 0002AA) Abrams Prototypes.

(Note: The costs for Sections 2 and 3, combined together, represent the value for CLIN 0002AA in the contract).

Section 4: (CLIN 0003AA) Unique Crusader Engine Design and Development.

Section 5: (CLIN 0003AA) Crusader Prototypes.

(Note: The costs for Sections 4 and 5, combined together, represent the value for CLIN 0003AA in the contract).

Section 6: (CLIN 0004AA) Abrams Category 2 Integration Work (Contract Option).

Section 7: (No Contract CLIN) Abrams Category 2 Integration Work

Section 8: (No Contract CLIN) Crusader Category 2 Integration Work.

L.6.4 Presentation of Cost Data. Offerors are required to submit the cost estimates and necessary data for the Government to perform its evaluation. Costs for Element 1, including their sections, shall be presented by government fiscal year in "FY00 constant" dollars. Costs for Elements 2 and 3, including their sections, shall be presented in "then-year" dollars by government fiscal year. It is important that all direct costs be presented in accordance with the offeror's Contractor Work Breakdown Structure (CWBS) in order to ensure that efforts stated in the offeror's technical, logistics and management volumes are in fact accounted for in their cost. This information shall be adequately cross-referenced, suitable for detailed analysis and traceable to the applicable section of their volume. A summary of the elements and their associated sections, along with the level of cost data that is expected to be submitted by the offeror for each element/section, is presented below.

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L.6.4.1 Element 1: Operations and Support---This Element is comprised of two sections. Operations and Support costs (O&S) are incurred after deployment and, for the purposes of this solicitation, will include the cost of spare and repair parts (consumables and repairable) and petroleum, oil, and lubricants (POL). The offeror shall provide an operations and support cost estimate of the Abrams engine and Crusader power pack based on the selected operational and cost data defined in the following sections. There are two sections under this element.

Sec. 1. Spare and Repair Parts: The costs for spare and repair parts are based on failure rates and the cost per failure. Paragraph L.3.3.1.3, Reliability/Maintainability/ Durability, requests the offeror to provide failure rates at the subassembly, assembly, and subsystem levels. In order to compute the spare and repair parts cost, these failure rates shall be multiplied by the vehicle operating tempos and the vehicle densities (Attachment 3 Enclosure B) to arrive at the expected number of failures per year. The offeror must provide the average cost per failure for those subassemblies, assemblies, and subsystems which are considered cost drivers in this area (i.e., make up at least 80% of the total cost of spares and repair parts). In order to do this, the offeror must also identify whether each of these cost driving subassemblies, assemblies, and subsystems are expected to be a repairable (i.e., a failure results in the item being replaced and then the failed item is turned into the supply system to be repaired) or a consumable (a failure results in the item being replaced and the failed item is then discarded). The cost per failure for a repairable should include the cost (labor and material) to repair the item to a level whereby it can return to the supply system. In general, the cost per failure for a consumable will simply be the unit cost of the item. The offeror shall provide the prediction methodology for all estimates that are not already covered in the response to Paragraph L.3.3.1.3. In order to insure the data provided for the Spare and Repair Parts is clear and consistent, the offeror shall present the data in a table similar to the following:

Component (Cost Drivers	Failure Rate (MTBF in hrs)	Unit Cost	Cost Per Failure	Consumable (C) Repairable (R)
Common Engine	Xxxx	\$xxx	\$xxx	R
Crusader Trans	Xxxx	\$xxx	\$xxx	R
Subassembly 1	Xxxx	\$xxx	\$xxx	C
Subassembly 2	Xxxx	\$xxx	\$xxx	R
"	Xxxx	\$xxx	\$xxx	R
"	Xxxx	\$xxx	\$xxx	C
"	Xxxx	\$xxx	\$xxx	C

Sec. 2: Petroleum, Oil, and Lubricants (POL). The offeror shall compute the cost of POL per fiscal year by multiplying the fuel consumption rate times the vehicle operating tempos and vehicle densities (Attachment 3 Enclosure B). The offeror shall insure that the fuel consumption rate used in this computation is consistent with the data provided in the Requirements Compliance Matrix.

L.6.4.1.1 Inflation Guidance. All costs should be expressed in FY00 constant dollars. If the offeror finds it necessary to apply inflation indices, the current OMB/OSD inflation indices provided in Attachment 3 Enclosure E should be used.

L.6.4.1.2 Net Savings and Present Value Analysis. For Abrams only, the offeror shall perform a net TOC savings and present value analysis (discounted dollars) of their proposal by the rules set forth in Attachment 3 Enclosure C. The savings to investment ratio (SIR) and payback period are defined in Attachment 3, Enclosure C.

L.6.4.2 Element 2: Phase II Production---This Element is comprised of two sections, shown as follows.

Sec. 1: Production Costs: Offerors shall provide their cost estimates, by program year, for the production of the Abrams propulsion system and Crusader power pack, based on the Government's detailed production schedule provided as Attachment 2, Enclosure B. The total projected Abrams fleet requirements are 2,845 systems over 8 years, beginning in FY03. The Crusader program production requirements are 755 power packs over 6 years beginning in FY06. Offerors shall adhere to the CWBS structure for presenting their direct costs. The total production cost for each prototype system, by program year, shall be shown using the Government's cost schedule format (Attachment 3, Enclosure F).

Sec. 2: Production Category 2 Application Work: Offerors shall provide their cost, consistent with the CWBS structure and the Government's suggested cost schedule format, to accomplish the integration/application of the prototype system with the interfacing systems of the vehicle. This effort applies only to the Abrams system (identify separately both LATP & field

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application efforts); do not propose costs to perform integration/application for the Crusader system.

L.6.4.2.1 The following cost data must be provided in support of the proposed values for both sections under Element 2: Production.

Material: Provide a narrative which explains the method used to develop the material cost, including information regarding the extent to which the material cost is based on vendor quotes, purchase order history, estimates, or other means. For any material items with a per end-item (for the Abrams propulsion system and Crusader power pack) value greater than \$500, provide the following additional information:

- (1) item name/description/vendor
- (2) per unit base cost and quantity used per end-item
- (3) extended cost (base unit cost multiplied by the quantity)
- (4) basis for the cost (estimate, quote, purchase order history)
- (5) indicate whether item is sole-source, competitive or commercial

Direct Labor (includes both factory and office labor): Provide the estimate of direct labor hours and dollars required to accomplish the requirement for the Abrams propulsion system and Crusader power pack. Support related to direct labor shall include the following:

- (1) a time-phased breakout of the direct labor hours, by labor category.
- (2) a narrative description of the method used to estimate the hours, discussing the assumptions used and cost estimating relationships.
- (3) the labor wage rates applied to the hours, by labor category, including the basis for the rate and any escalation applied.

Indirect Rates: Identify the indirect rates, by category, by year, used in the development of your costs for the Abrams propulsion system and Crusader power pack. Provide, as well, the following information, as applicable:

- (1) the effective date of the rates or the data that formed the basis for the rate and state whether or not any rate package has been submitted to DCAA/DCMAO for their review.
- (2) a narrative explaining the basis for the rates. Specifically identify any escalation factors applied.
- (3) for those rates in your proposal, provide the recorded/booked rate for the last completed accounting period (i.e. fiscal year or calendar year) and explain any variance between the previously recorded actual and what is now being used in your proposal.
- (4) should your rates reflect established Forward Pricing Rates, furnish the name of the Government entity with whom these rates were negotiated and the effective date of settlement.

Other Direct Costs: Identify any Other Direct Costs (ODCs) as part of your proposal submission for the Abrams propulsion system and Crusader power pack consistent with your accepted accounting methodology, that will be required to accomplish the requirements under this effort and charged directly against this contract. Include a brief explanation of the purpose for these costs and their method of computation.

Contingencies/Adjustments: Identify the nature and amount of any contingencies or any upward/downward adjustments included in your proposal along with an explanation of their basis.

Profit: State the profit rate and total dollars included in your proposal

Quantity/Production Rate Impact: Identify the impact on the production cost estimates of varying total production quantities and/or production rates. Within reason, provide a methodology for adjusting the production cost estimates to accommodate different production quantities and/or production rates.

L.6.4.3 Element 3: Phase I Development - This Element is comprised of eight sections, shown as follows.

Sec. 1: Common Engine Design and Development: Offerors shall provide their cost for the Common Engine Design and Development effort. This cost represents the common engine design and engineering services that will be shared by both the Abrams and Crusader programs. Costs shall be presented in accordance with the offeror's CWBS structure. The total cost for this section shall be presented in accordance with the Government's suggested cost schedule format (Attachment 3, Enclosure F). One total cost, combining Abrams and Crusader, is acceptable.

Sec. 2: Unique Abrams Engine Design and Development: Offerors shall provide their cost for the Unique Abrams Engine Design and Development effort. This cost represents the unique engine design and engineering services for the Abrams prototype

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engine. Costs shall be presented in accordance with the offeror's CWBS structure. The total cost for the unique design efforts shall be presented in accordance with the Government's suggested cost schedule format (Attachment 3, Enclosure F).

Sec. 3: Abrams Prototypes: Costs shall be provided for the fabrication and delivery of the 13 Abrams prototype engines. Identify the costs in accordance with the CWBS structure with a total cost summarized in accordance with the Government's suggested cost schedule format.

Sec. 4: Unique Crusader Engine Design and Development: Offerors shall provide their cost for the Unique Crusader Engine Design and Development effort. This cost represents the unique engine design and engineering services for the Crusader prototype engine. Costs shall be presented in accordance with the offeror's CWBS structure. The total cost for the unique design efforts shall be presented in accordance with the Government's suggested cost schedule format (Attachment 3, Enclosure F).

Sec. 5: Crusader Prototypes: Costs shall be provided for the fabrication and delivery of the 11 Crusader production prototype engines. Identify the costs in accordance with the CWBS structure with a total cost summarized in accordance with the Government's suggested cost schedule format.

Sec. 6: Abrams Category 2 Integration Work: Offerors shall provide the cost to 1) design, develop and fabricate propulsion system hardware (including required transmission related efforts) proposed under CLIN 0004AA, 2) integrate such hardware with the engines for delivery IAW the proposed schedules provided in Attachment 2 for testing and 3) design the propulsion system's interface characteristics and relationships (mechanical, electrical, hydraulic and software) between the propulsion system hardware they have furnished and any other interfacing systems on the vehicle. (Offerors shall refer to Section C.1.3.4 and Attachment 1 of the solicitation package for a clearer definition of the Category 2 work). Identify costs by the CWBS structure and present the total cost in accordance with the Government's suggested cost schedule format. This cost applies only to the Abrams system.

Sec. 7: Abrams Category 2 Integration Work: Offerors shall provide the cost for the development engineering and fabrication of the vehicle and other non-engine specific propulsion system hardware. It is envisioned that these costs will primarily represent all "Category 2" efforts, less any proposed by the offeror under CLIN 0004AA (Sec 6 above), for the Abrams System Integrator (GDLS) who is required to perform the Abrams vehicle integration efforts.

Sec. 8: Crusader Category 2 Integration Work: Offerors shall provide the cost to 1) design, develop and fabricate eleven (11) prototype transmissions, 2) integrate these transmissions with the engines for delivery IAW the proposed schedules provided in Attachment 2 for power pack testing and 3) design the vehicle system's interface characteristics and relationships (mechanical, electrical, hydraulic and software) between the power pack system, including transmission, with any interfacing systems on the vehicle. Identify costs by the CWBS structure and present the total cost in accordance with the Government's suggested cost schedule format. This cost applies only to the Crusader system.

L.6.4.3.1 . The offeror must breakout the cost proposed for each section under Element 3 "Phase I Development Costs" as specified below. The cost breakout for Sections 1,2,3,4, and 5 relates to the design, development, and fabrication of the common engine and the engine specific interfaces that are unique to each vehicle. The cost breakout for Sections 6, 7 are for the design, development, fabrication and integration of other Abrams unique propulsion system changes (e.g. transmission, final drives, suspension system, etc) to the common engine, and to integrate the complete propulsion system with any interfacing systems on the Abrams tank. The cost breakout for Section 8 is for the design, development, fabrication and integration of the Crusader transmission to the common engine, and to integrate that power pack with any interfacing systems on the Crusader Artillery System.

Material: Provide a narrative which explains the method used to develop the material cost, including information regarding the extent to which the material cost is based on vendor quotes, purchase order history, estimates, or other means. For any material items with a "per end-item value" greater than \$500, provide the following additional information:

- (1) item name/description/vendor
- (2) per unit base cost and quantity used per end-item
- (3) extended cost (base unit cost multiplied by the quantity)
- (4) basis for the cost (estimate, quote, purchase order history)
- (5) indicate whether item is sole-source, competitive or commercial

Direct Labor (includes both factory and office labor): Provide the estimate of direct labor hours and dollars required to accomplish the requirement. Support related to direct labor shall include the following:

- (1) a time-phased breakout of the direct labor hours, by labor category.
- (2) a narrative description of the method used to estimate the hours, discussing the assumptions used and cost

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estimating relationships.

(3) the labor wage rates applied to the hours, by labor category, including the basis for the rate and any escalation applied.

Indirect Rates: Identify the indirect rates, by category, by year, used in the development of your costs. Provide, as well, the following information, as applicable:

(1) the effective date of the rates or the data that formed the basis for the rate and state whether or not any rate package has been submitted to DCAA/DCMAO for their review.

(2) a narrative explaining the basis for the rates. Specifically identify any escalation factors applied.

(3) for those rates in your proposal, provide the recorded/booked rate for the last completed accounting period (i.e. fiscal year or calendar year) and explain any variance between the previously recorded actual and what is now being used in your proposal.

(4) should your rates reflect established Forward Pricing Rates, furnish the name of the Government entity with whom these rates were negotiated and the effective date of settlement.

Other Direct Costs: Identify any Other Direct Costs (ODC) as part of your proposal submission, consistent with your accepted accounting methodology, that will be required to accomplish the requirements under this effort and charged directly against this contract. Include a brief explanation of the purpose for these costs and their method of computation.

Contingencies/Adjustments: Identify the nature and amount of any contingencies or any upward/downward adjustments included in your proposal along with an explanation of their basis.

Fee: State the fee rate and total dollars included in your proposal.

L.6.4.3.2 Cost Accounting System: Provide evidence that your accounting system is capable of tracking and segregating cost data in sufficient detail to administer a cost-reimbursement type contract. This evidence may include a letter from either the DCMAO or DCAA stating that you have an acceptable accounting system for this type of contract. If you do not have a DCMAO or DCAA approved accounting system, describe what action you are taking to obtain DCMAO or DCAA approval of your accounting system prior to contract award.

L.6.5 Other Issues.

L.6.5.1 Should the common engine offered in your proposal, with some moderate degree of modification, represent a Non-Developmental Item (NDI) with previous documented sales activity, we ask that you provide a brief discussion of its price history and the volume of sales made. Indicate the major differences between those items previously sold and the unit for this acquisition, and attempt to address how those differences impact the price.

L.6.5.2 If an offeror is proposing the use of Government Furnished Equipment (GFE) on a rent-free, non-interference basis, then the offeror must provide as part of the proposal a letter from the organization controlling that equipment authorizing its use on this contract for the specific time periods involved. In addition, offerors shall provide a replacement cost value for any GFE intended to be used for this effort.

*** END OF NARRATIVE L002 ***

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SECTION M - EVALUATION FACTORS FOR AWARD

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M.1 Introduction:

M.1.1 Selection of the successful offeror will be based upon a comprehensive evaluation to determine the source whose proposal provides the best overall value to the Army using source selection "trade-off" procedures. The selection will be based on a comprehensive evaluation to determine the source whose proposal is considered the best value to satisfy the Government requirements and objectives at a reasonable, realistic and affordable cost. The Government reserves the right to make no award as a result of the solicitation if, upon evaluation of proposals, no proposals are deemed likely to meet the technical requirements at an acceptable level of risk and/or cost. Also the Government reserves the right to award a contract based on initial offers, with no discussions, unless the contracting officer otherwise determines discussions are in the best interest of the Government. In the event that discussions are considered necessary, offeror's responses to Government Items for Discussion/Consideration shall be in writing.

M.1.2 Selection of the successful offeror shall be based on the evaluation of the information requested in Section L against the criteria stated below. Proposals which merely offer to perform work in accordance with the Solicitation, or which fail to present more than an indication of capability or compliance with the technical requirements without elaboration shall be deemed unacceptable and shall not be considered further. Any proposal which is unrealistic in terms of technical and schedule commitments, or unrealistically high or low in cost, will be deemed reflective of an inherent lack of competence or indicative of a failure to comprehend the complexity and risks of the Army's requirements as set forth in the solicitation and may be grounds for rejection of the proposal. Furthermore, any significant inconsistency between proposed performance and cost, if unexplained, may be grounds for rejection of a proposal due to an offeror's misunderstanding of the work required or his ability to perform any resultant agreement.

M.1.3 The evaluation criteria are comprised of four areas: (1) Technical, (2) Logistics (3) Performance Capability, (4) Total Ownership Cost. Of the four areas, Technical and Total Ownership Cost are most important and equal to each other. Each is slightly more important than Logistics, which is more important than Performance Capability. The Technical, Logistics, and Performance Capability Areas, when combined, are more important than Total Ownership cost.

M.2 Reserved

M.3 Technical Area

M.3.1 Under the Technical Area, the Army will evaluate the merits and risk of the propulsion system solution based on its impact on overall vehicle performance when integrated in each vehicle across the required environmental spectrum. The Technical Area is divided into three elements: "Size and Weight", "Propulsion System Performance", and "Propulsion System Integration". The "Size and Weight" element is more important than either the "Propulsion System Performance" or "Propulsion System Integration" elements. The "Propulsion System Performance" and "Propulsion System Integration" elements are equally weighted.

M.3.1.1 "Technical Risk" will be measured in terms of the level of risk that the offeror's technical approach will satisfy the Army's performance requirements and objectives based on: (1) The feasibility and practicality of the approach, (2) The realism of the approach, including how clearly and credibly it is supported, and (3) The maturity of the design solution.

M.3.1.2 "Technical Merit" will be measured in terms of the advantages and disadvantages of each approach. An "advantage" is any distinguishing feature of an offeror's technical proposal that reflects an outstanding characteristic that is likely to result in superior performance, such as performance above minimum requirements, which will result in a consequential benefit to the Army. A "disadvantage" is any distinguishing feature of an offeror's proposal that reflects a negative characteristic of meaningful concern, which is likely to result in unfavorable performance.

M.3.1.3 It is incumbent upon the offerors to clearly demonstrate that they can achieve any advantageous characteristics (which will be included in the model agreement) with no more than moderate risk in order to receive additional credit for that characteristic. Furthermore, in order to receive additional credit for any advantageous characteristic, attainment of such characteristics must not otherwise increase the risk of any other evaluation element above a moderate level.

M.3.2 Element - 1 Size and Weight: Under this element the Army will evaluate the (1) feasibility/achievability, the technical risk and the technical merit of the proposed power pack, including all ancillary items that are contained within the engine compartment, to fit the space allowances specified in Enclosures A and F to Attachment 5 and, (2) the offeror's design to weight objective for the power pack and the proposed approach for weight to assess the achievability of the proposed weight objective and the technical risk and the technical merit of the proposed approach in meeting the Government's maximum vehicle weight requirements as specified in Attachment 5, Enclosure E for Abrams and Enclosure F for Crusader. For Abrams, the proposed propulsion system solution, when integrated with all associated subsystems shall not exceed the total weight of 16,830 lbs as shown in Attachment 5, Enclosure C.5 when the engine and all other subsystems or components displaced from the vehicle are considered. For Crusader, the wet weight of the engine, transmission, complete cooling system and a full load of fuel, as specified in Enclosure F (paragraph 3.2.2.2.1) of Attachment 5, shall not exceed 10,000 lbs.

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M.3.3 Element 2 - Propulsion System Performance - The offeror's proposed approach to meeting overall automotive performance and all other system power requirements (e.g. Abrams Gun Turret Drive, Crusader Re-Supply Operations, Electrical Power and Nuclear, Biological and Chemical System) will be evaluated to assess the technical risk and the technical merit of the offeror's proposed solution for achieving vehicle system mobility performance requirements specified in Enclosures E and F of Attachment 5, for Abrams and Crusader respectively. The Performance mobility element is divided into two factors: (1) "Threshold Requirements" and (2) "Objective Requirements". The "Threshold Requirements" are more important than the "Objective Requirements" and are not subject to trade-offs.

M.3.3.1 Factor 1 Threshold Requirements: The offeror's proposed approach to meeting automotive performance and other system power requirements will be evaluated to assess the technical risk and the technical merit of the offeror's proposed solution for achieving the threshold requirements for Abrams in Enclosures E to Attachment 5 specified as Mobility System Function (para 1.0), Idle Fuel Consumption (para 1.1.1), Cruising Range (para 1.1.2), Steering and Braking (para 1.1.3), Sustained Speeds (para 1.1.4), Tractive Effort Cooling (para 1.1.5), Starting (para 1.1.6), Fording (48") (para 1.1.7), NBC System Air Requirement (para 1.1.8), Physical Requirements (para 1.2), Induced Environment (para 1.3), Transportability (para 1.4), Engine Controls (para 1.5), Durability (para 1.6), and Reliability (para 1.7). The Threshold Requirements for Crusader are in Enclosure F to Attachment 5 specified as Speed on Grade (para 3.2.1.1.4), Survivability Move (para 3.2.1.3.1), Steering and Braking (para 3.2.1.2), Cooling (para 3.2.1.3.5) and Towing Another Vehicle (para 3.2.1.3.6).

M.3.3.2 Factor 2 Objective Requirements: The offeror's proposed approach to meeting automotive performance and other mission requirements will be evaluated to assess the technical risk and the technical merit for the offeror's solution for achieving the proposed level of performance for the objective requirements specified in enclosures E and F of Attachment 5, for Abrams and Crusader respectively. As part of the assessment of objective requirements, the Army will assess the technical risk and the technical merit of the offeror's design solution for: powering the Abrams hydraulic system, Abrams electrical power generation, providing continuous clean air to the Abrams engine, the Abrams propulsion system lubrication design, and supplying compressed air to the existing Abrams NBC system. In addition, the Army will consider the trade-off justifications for any proposed changes in the objective performance requirements. While the offeror is expected to propose a solution that fully meets the specification, the Government is interested in acquiring a best-value solution that balances performance, cost, schedule and associated risks. Therefore, the Government will consider performance trade-offs for objective requirements only if the offeror clearly substantiates the offsetting benefits to the Government. The offeror is cautioned that any proposed performance trade-off must have compelling performance improvements in other areas, significant cost benefits and/or significant schedule benefits to be considered desirable by the Government. Any trade-off proposed by the offeror shall be accompanied by a trade-off analysis that provides rationale for the proposed trade-off and clearly substantiates the benefits to the Government. If the Government determines that the performance trade-off does not provide a meaningful offsetting benefit or is high risk, the offeror's proposed trade-off may be rated as a disadvantage.

M.3.4 Element 3 - Propulsion System Integration: The offeror's approach will be evaluated to assess technical risk and the technical merit of the vehicle integration requirements related to the degree, complexity, and impact of the changes to the vehicle at the system and subsystem levels for each vehicle, and the ease of application for Abrams in a field modification scenario described in Enclosure D to Attachment 6.

M.4 Logistics Area

Under this area the Army will assess the supportability of the proposed solution. The Logistics Area is divided into three elements: (1) Commonality, (2) Maintainability, and (3) Sustainability. The "Commonality" element is significantly more important than the equally weighted "Maintainability" and "Sustainability" elements.

M.4.1 Element 1 Commonality: The proposals will be evaluated to assess the extent and merit of Abrams - Crusader Engine Commonality. The Army will consider: (1) the degree of interchangeability of major engine components whereby more credit will be given to engine solutions that have interchangeability at higher component assembly levels, through the core engine itself, and (2) the degree to which the proposed interchangeability provides operational benefits to the using unit in terms of ease of maintenance and reduced ASLs.

M.4.2 Element 2 Maintainability: The Maintainability element is divided into two equally weighted factors (1) Ease of Maintenance and (2) Diagnostics/Prognostics.

M.4.2.1 Factor 1 Ease of Maintenance: The Offeror's approach to performing maintenance tasks will be evaluated to assess the ease, frequency, complexity, and tools required to perform each maintenance task.

M.4.2.2 Factor 2 - Diagnostics/Prognostics: The Offeror's proposed approach to develop and maximize the built in fault isolations/diagnostic/prognostics capability of the propulsion system and minimizing the need for stand alone test /diagnostic equipment and special tools will be evaluated to assess the merits of the approach and the feasibility of achieving the stated performance. The offeror's proposed approach for off-board diagnostics of electronic components will be evaluated to the extent

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that is compatible with both the Integrated Family of Test Equipment (IFTE); (Crusader) and the Direct Support Electrical System Test Set (DSEST); (Abrams).

M.4.3 Element 3 Sustainability The Sustainability Element is divided into two factors (1) Supply Support and (2) Logistics Documentation. The "Supply Support" factor is more important than the "Logistics Documentation" factor

M.4.3.1 Factor 1 Supply Support. The Army will assess the offeror's proposed approach to meeting the spare and repair part support requirements to comply with the Army's readiness goals, the viability of the supplier base for critical components, and the approach for managing obsolescence. In addition, the Army will assess the offeror's approach to inserting any emerging technologies that may have applicability to the proposed solution and the degree of parts standardization and interchangeability with parts in the Army/DoD Supply System.

M.4.3.2 Factor 2 - Logistics Documentation: The Offeror's proposed approach to integrating and interfacing with the existing standard Army Logistic System and system integrators to include the approach to developing, maintaining and delivering Provisioning Technical Data, Depot Maintenance Work Requirements and Technical Publications shall be evaluated to assess the merits of the approach and the risk of achieving these requirements.

M.5 Performance Capability Area:

M.5.1 Under this area the Army will assess schedule risk and offeror's likelihood of success in performing the solicitation's requirements as indicated by the extent of the offeror's record of past performance, and the organizational and management capabilities

M.5.2 The Performance Capability area includes three elements: (1) "Development and Production Capability" (2) "Past Performance", (3) "Small Business Participation". The "Development and Production Capability" element is most important and significantly more than the "Past Performance" element which is more important than the "Small Business Participation" Element.

M.5.3 Element 1: Development and Production Capability: The Army will assess the risk, merit and realism of the offeror's proposed development, and production approach. The assessment will include the preliminary IMP and preliminary IMS. The preliminary IMP will be included in the model contract. The Army will consider the following equally weighted factors: (1) Phase I Development Capability and (2) Phase II Production Capability.

M.5.3.1 Factor 1 Phase I Development Capability: The Army will assess the merit, completeness, realism and risk of the offeror's proposed systems engineering processes as proposed in the preliminary IMP, including performance metrics; risk management and metrics; cost management and metrics; weight management and metrics; reliability/durability management and metrics, software management; and modeling and simulation. The Army will assess the offeror's technical and management processes for interfacing with the Army and the System Integrating Contractors under the contract. In addition, the critical path reflected in the proposed IMS will be evaluated to assess the achievability of the offeror's critical path milestones to meet desired development schedule requirements specified in Enclosure A to Attachment 2, whereby more credit will be given to engine solutions that best meet the desired development and testing schedules specified in Attachment 2.

M.5.3.2 Factor 2: Phase II Production Capability and Depot Overhaul Plan: The evaluation will assess the merit, risk and realism of the offeror's process for building of production hardware and establishing a depot overhaul relationship, including facilitization, at Anniston Army Depot. In addition, the critical path reflected in the IMS will be evaluated to assess the achievability of the offeror's critical path milestones to meet production and depot overhaul requirements at Anniston Army Depot.

M.5.4 Element 2- Past Performance: An independent group of evaluators called the Performance Risk Assessment Group (PRAG) will assess the extent of the offerors qualifications and the quality of the offeror's past performance, and the qualifications and past performance of proposed subcontractors to assess the level of risk related to successful accomplishment of this effort. An offeror's qualification is based on the degree of relevant corporate background, knowledge, and experience related to designing developing, and producing high power propulsion systems (over 1000 hp). The Army will focus its inquiry on all aspects of contract performance, including technical performance, delivery schedule conformance, contract overruns, and the Offeror's general history of cooperative behavior and commitment toward customer satisfaction. A significant achievement, problem, or lack of relevant past performance data in any aspect of the offeror's prior performance can become an important consideration in the source selection process. A negative finding under any aspect of past of past performance may result in an unfavorable risk rating. Therefore, offerors are reminded to include all relevant past efforts, including demonstrated corrective action, in their proposal.

M.5.5 Element 3: Small Business Participation: The Government will evaluate the extent to which offerors identify, and commit to utilizing, SBs, SDBs, WOSBs, HBCU/MIs and Hub Zone concerns in the performance of the contract. Such utilization may be as

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the prime contractor or a subcontractor, or as a member of a joint venture or teaming arrangement. The evaluation will include the following:

- (1) The extent to which the proposal specifically identifies SBs, SDBs, WOSBs, HBCU/MIs and Hub Zone concerns and the estimated dollar value of their participation, including the participation of the offeror, if it is a SBs, SDBs, WOSBs, HBCU/MIs or Hub Zone concerns;
- (2) The complexity of the items/services to be furnished by SBs, SDBs, WOSBs HBCU/MIs and Hub Zone concerns;
- (3) The extent of participation of such concerns in terms of the value of the total contract amount; and
- (4) An assessment of the risk, based upon past performance, of the offeror actually achieving the involvement of small business concerns as proposed. Such assessment will include:
 - a. For all offerors, an evaluation of performance over the past three calendar years in complying with the requirements of FAR 52.219-8, Utilization of Small Business and Small Disadvantaged Business Concerns;
 - b. For offerors who are large businesses as defined by the Standard Industrial Code applicable to this solicitation, an additional evaluation of past performance over the last three calendar years in complying with the requirements of FAR 52.219-9, Small Business and Small Disadvantaged Business Subcontracting Plan. Where a large business has not held a contract that included 52.219-9, its prior performance will be evaluated against 52.219-8 only

M.6 Total Ownership Cost

M.6.1 The evaluation of proposals submitted in response to this solicitation shall be conducted on a best value basis utilizing the tradeoff process. The tradeoff process provides the Government the flexibility to select the best value, which may not always be the lowest priced proposal. As part of the best value determination, the relative advantages and disadvantages, along with the merits and risks of each proposal, shall be considered in selecting the offer which represents the best value to the Government.

M.6.2. The Total Ownership Cost Area consists of three elements:

- (1) Operations and Support Cost,
- (2) Phase II Production Cost
- (3) Phase I Development Cost

Operations and Support Cost is slightly more important than Phase II Production Cost which is slightly more important than Phase I Development Cost. The evaluation of Total Ownership Cost Area will result in an assessment of reasonableness, realism, affordability and risk. The Government will develop, from its assessment of the data submitted by the offeror, a most probable cost by adding together the most probable Operations and Support Cost, Development Cost and Production Cost for each vehicle (e.g. Abrams and Crusader) to compute a most probable Total Ownership Cost. For Abrams, the Government will assess TOC considering the entire propulsion system development cost, the entire propulsion system production cost and only the engine O&S cost. For Crusader, the Government will assess the TOC for development of the entire power pack, production of entire power pack and O&S cost of entire power pack.

M.6.3 In addition to the above, the total ownership cost for Abrams will be further assessed at the Area Level in terms of Net Savings, Present Value (discounted dollars), Savings to Investment Ratio (SIR) and payback period as explained in Attachment 3, Enclosure C. The purpose of this evaluation is to assess magnitude of the proposed Abrams O&S cost savings, the realism, and the degree of confidence in achieving significant total ownership cost reductions for Abrams. In the event that TOC between two or more proposals are considered essentially equal, the above calculations will be used as discriminating considerations.

M.6.4 Element 1: Operations and Support Cost. This element consists of two sections (reference Section L.6.4.1). The combined total assessed value of both sections represents the most probable cost for Element 1. An assessment of reasonableness, realism and risk will be determined at the element level.

M.6.5 Element 2: Phase II Production. This element consists of two sections (reference Section L.6.4.2). The combined total assessed value of both sections represents the most probable cost for Element 2. An assessment of reasonableness, realism and affordability will be determined at the element level.

M.6.6 Element 3: Phase I Development. This element consists of eight sections (reference Section L.6.4.3). The combined total assessed value of all eight sections represents the most probable cost for Element 3. An assessment of reasonableness, realism

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and affordability will be determined at the element level.

M.6.7 Offerors are cautioned that their costs must be fair and reasonable, balanced and consistent with their technical approach. Any offer failing to meet this criteria may be rejected. An unbalanced offer is one where the costs are significantly high or low for one given period versus another period. Offerors must demonstrate a direct relationship between the effort expended and its cost. Any significant inconsistency, if unexplained, raises a fundamental question as to the offeror's understanding of the work required and to their ability to perform the contract at the stated cost.

M.6.8 Cost may be controlling in circumstances where (a) two or more proposals are otherwise judged equal in all other areas; (b) the non-cost advantages of a particular proposal are deemed not worthy of the additional cost involved or (c) a superior proposal is at a price the Government cannot afford. The Government will select for award the offeror whose proposal presents the best overall value to the Government.

*** END OF NARRATIVE M002 ***